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ANALYSIS OF THE MEDICARE ECONOMIC INDEX

FINAL REPORT
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Submitted by:
R. Berry

Project Manager:
R. Budnitz
Director,
Energy and Environmental
Technologies Division

Teknekron Research Inc.
2118 Milvia Street
Berkeley, California 94704

Submitted to:
Dr. Peter McMenamin
Dept. of Health & Human Services
330 Independence Ave., S.W.
Washington, D.C. 20201

TEKNEKRON
RESEARCH, INC.

STATEMENT OF COST AND PERSONNEL RESPONSIBLE FOR REPORT

This Report is made pursuant to Contract No. 500-78-0052. The charge to the Department of Health and Human Services for the work resulting in this report (inclusive of the amount so charged for any prior reports submitted under this contract) is $136,600. The names of the persons, employed or retained by the contractor with managerial or professional responsibility for such work or for the content of the report, are as follows

1. Robert R. Berry.

This Final Report describes work performed through July 15, 1981, for the First Option Year of Contract No. 500-78-0052 in Area 1. Two separate accompanying Reports cover work on Case Mix Analysis and in Area 4. The work described here for Area 1 focuses on the estimation of the costs of operating office-based practices in each of the major physician specialties. Teknekron Research, Inc. has already completed similar work on the costs of physician practices for the Base Year under this Contract using as input, data from the 1976 Physician Practice Cost Survey. In this Report for the First Option Year, we continue the same type of analysis but using the 1977 Survey.

In Section I below, we explain the role of the Medicare Economic Index in setting current prevailing charge limits and we note how the Index makes use of the cost estimates which are presented in Section II. That Section includes estimates of the average costs in each of the major input categories for the 15 specialties and it includes the corresponding cost shares for each input. The following Section shows the results from a multivariate model which determines whether certain variables can explain a significant part of the variation in these cost shares; these variables include the physician's specialty, the location of the practice, and various practice characteristics. Section IV provides a more detailed analysis of the effect of these variables. It includes regression analysis of cost share equations and index equations. Section V expands the sample for this model to include the 1976 Survey in order to test for shifts in the cost share patterns across the two years. The last Section describes related work on practice costs per visit and the distribution of employee types.

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SECTION I

INTRODUCTION

Since 1976, the Health Care Finance Administration, which administers Medicare, has used a new method to set limits on reimbursements to physicians billing for services under the program. Because of the rapidly increasing Medicare budget, Congress had passed new legislation in 1972 which directed the HCFA to change the way in which it set the reimbursement for physicians; it mandated that future adjustments in reimbursement be tied to changes in physicians' costs. After a delay from 1972 to 1975 due to the price freeze associated with the Economic Stabilization Program, the HCFA in 1976 responded to the Congressional directive and implemented a new method to update the prevailing charges.

The HCFA sets fees through the customary, prevailing and reasonable charge system. In this system, the customary charge for a given procedure is the median of the physician's own billings in the previous year while the prevailing is the 75th percentile of billings for all physicians from the same specialty in the region. The physician receives the minimum of the actual amount billed, the customary or the prevailing. In this system, the prevailing charge establishes the maximum reimbursement although many physicians do not qualify for it because their customaries are lower. Prior to 1976, the HCFA set the prevailings using the distribution of actual charges in the preceding calendar year and with fees increasing each year, the prevailing also rose. This method permitted reimbursements to increase with fees rather than costs.

Since 1976, the HCFA has adopted a new procedure; it sets the new prevailings by applying the current value of an Index to the prevailings in the base year 1973. Each year the HCFA updates this Medicare Economic Index value by using estimates of the increase in the price of physician inputs and index weights from the Physician Practice Cost Surveys. Using the Index to update prevailing charges breaks the link between fees and prevailings based on previous year charges, which was the intent of the legislation. This Report presents several sets of estimates for these weights in Section II below. Before considering these weights, we will briefly review the form and function of the Index itself.

The Medicare Economic Index is a partially chained Laspeyres index with seven input categories: rent, supplies, employee salaries, automobile expenses, malpractice premiums, net income, and other (i.e., equipment and overhead). In general, the Laspeyres price index is the ratio of current to base period prices, each price in both periods weighted by its expenditure share in the base period. A chained Laspeyres index updates these base weights each period. The Index weights undergo a limited updating each year with the weight for net income remaining unchanged at sixty percent; this leaves a fixed forty percent share within which the six non-physician cost categories can vary. In the last two years, revisions to the weights have come from the data in the Physician's Practice Cost Survey. Because a lag exists between the date of the Survey itself and the availability of the data, the weights from the Survey are not current year weights. In fact, the Index value for the 1982 Fee Screen Year uses data from the 1977 Survey to estimate the weights.

The Index uses price proxies from the B.L.S.; thus, these prices do not come from the Survey. The price for malpractice premiums originates in a special HCFA Survey. Table 1 displays the values of the weights and the price proxies for past years. For each category, the current proxy value appears on the first line, followed by the ratio of the current to the previous year value. The value of the weight is shown on the third line for each cost category. The Index value for each year appears at the bottom of the Table.

Table I

Medicare Economic Index

	1971	1974	1975	1976	1977
1. Physician Employees					
a. Wage					
1. Current proxy value	3.27	3.8200	4.1300	4.3600	4.6000
2. Ratio to previous period		1.1682	1.0812	1.0557	1.0550
b. Index weight		.1480	.1480	.1720	.1720
2. Rental Cost					
a. Price					
1. Current proxy value	124.30	150.6000	166.8000	177.2000	189.6000
2. Ratio to previous period		1.2116	1.1076	1.0624	1.0700
b. Index weight		.0560	.0600	.0400	.0400
3. Auto Expenses					
a. Price					
1. Current proxy value	116.60	136.6000	149.8000	164.6000	176.6000
2. Ratio to previous period		1.1715	1.0966	1.0988	1.0729
b. Index weight		.0240	.0280	.0200	.0200
4. Supplies					
a. Price					
1. Current proxy value	102.40	112.7000	126.6000	134.0000	140.5000
2. Ratio to previous period		1.1006	1.1233	1.0585	1.0485
b. Index weight		.0360	.0360	.0320	.0320
5. Other					
a. Price					
1. Current proxy value	121.30	147.7000	161.2000	170.5000	181.5000
2. Ratio to previous period		1.2176	1.0914	1.0577	1.0645
b. Index weight		.1360	.1120	.1080	.1080
6. Malpractice Premiums					
a. Price					
1. Current proxy value	–	–	–	–	–
2. Ratio to previous period	–	–	1.8400	1.4170	1.1030
b. Index weight	–	–	.0160	.0280	.0280
7. Physician Net Income					
a. Wage					
1. Current proxy value	122.28	154.4300	163.8900	176.2900	189.5300
2. Ratio to previous period					
a. Gross of productivity		1.2133	1.0611	1.0757	1.0751
b. Productivity measure		1.0133	1.0158	1.0375	1.0219
c. Net of Productivity		1.1999	1.0446	1.0368	1.0521
b. Index weight		.6000	.6000	.6000	.6000
Medicare Economic Index					
1. For indicated year		1.1901	1.0755	1.0544	1.0564
2. Cumulative to year		1.1901	1.2800	1.3496	1.4257

SECTION II

DISTRIBUTION OF PHYSICIAN PRACTICE COSTS

This Section presents several tables describing the costs of the physician practice. These tables include estimates of total cost and costs by seven main categories for the entire population and for each of the fifteen specialties sampled in the Survey. In addition, the Section includes tables of cost shares by the same seven main cost categories for each of the fifteen specialties. These costs and cost shares are presented with several different assumptions related to the interpretation and editing of the data. (The full set of average costs and cost shares appears in the accompanying Appendix.)

The 1977 Survey asked physicians substantially the same questions as were asked in the 1976 Survey. These questions covered the areas of practice organization, the types and hours of medical activities, the costs of operation and amounts of net and gross income, the fees charged various groups for specific procedures and some characteristics of patients. For Area 1, the main variables of interest are the costs of operation and net income and the size and type of practice organization.

Before explaining in detail the estimation of the weights for the Medicare Economic Index, some issues concerning the Survey's questions are important to review. The 1977 Survey was conducted in calendar year 1978 in order to capture the costs of operation for the entire previous calendar year. (Because many physician firms operate on a non-calendar fiscal year, costs on average probably represent a slightly earlier period than mid-1977.) The Survey's unit of observation was the individual physician and not the firm in which the physician was working. Each physician was asked about own firm's cost of operation for rent and utilities, medical supplies, medical equipment, and labor but asked only about own malpractice premiums, auto expenses, net income, and pensions. Thus, the Survey responses were a mixture of individual and firm-wide payments, a result which could lead to some bias in the estimation of firm-wide costs.

This result raises the issue concerning choice of the individual physician, rather than the firm, as the unit of observation. The choice of the physician as the unit allowed the inclusion of Survey questions concerning the physician's individual allocation of effort in medical activities; and this choice also permitted a more accurate sampling of the various specialties, both important objectives of the Survey. Furthermore, over 65 percent of the Survey respondents were solo practitioners where the physician could respond with complete firm-wide physician expenses. All of the other respondents, the remaining 35 percent, came from groups or partnerships where the respondent was only asked about own physician expenses. However, 57 percent of these were from groups in which all physicians claimed equal income and were from the same specialty. In these groups, the net income and malpractice premiums of the interviewed physician very likely produced a good estimate for the remaining firm members.

Consequently, in 85 percent of the total cases, the physician's responses provide quite accurate estimates of firm-wide physician-related expenses. For the remaining 15 percent, only costs per physician are known, not the total costs for the firm. To determine the impact of this 15 percent on the firm-wide cost share specification, the analysis presented in the following tables shows the cost shares for both the firm-wide and per physician specification. Also, firm-wide cost shares are presented for the groups with equal income and from the same specialty and for the groups with unequal incomes or from different specialties.

The Survey asked physicians about expenses in six of the seven cost categories included in the Index. It omitted general overhead expenses (e.g., billing, accounting, depreciation on equipment). The Survey only requested annual medical equipment expenses and thus, the overhead expenses in general are substantially under-estimated if these equipment expenses are used as a proxy. In fact, the responses to the annual equipment expense question show such great variation that quite likely many physicians answered not with depreciation but with the value of the current year's purchase of new equipment. However, the 1975 Survey included an extensive set of questions on the firm's overhead expenses and previous analysis indicated that in 1975 these expenses totalled 10.8 percent of the firm's total cost. In one set of estimates of cost shares, the value of 10.8 percent is used for overhead expenses; in the remaining set of estimates, the medical equipment expenses are used as a proxy.

The Survey asked the physician separately about net income and pensions. The question on net income did not explicitly ask for net income less pension but because pensions are deductible most physicians probably responded with income net of pension payments. Because of the possible ambiguity in this response, estimates of the Index weights are prepared both with the pension payments added to net income and with net income alone. A separate issue is the justification of pensions as a current expense in the physician firm. Subsequent work will examine the extent and impact of pensions.

Net income clearly is not a direct cost to the physician firm in the same sense as labor or supplies. One can argue that due to long-run restrictions in the supply of physicians, net income contains a greater than competitive return to physician time. One could assume that the wages of physician employees are a better measure of the cost of physician time but using these wages requires a method to control for differences between physician employees and physician owners on factors related to the production of medical care. As in the Base Year work, no adjustment to net income will be made to account for this effect; part of the reason is that the sample of physician employees in the Survey is only 120.

With respect to other expenses, the physicians were asked to report the total weekly salary and total hours for each of five categories of non-physician employees. In some cases, the physician with more than one employee in a category reported the salary or hours of only one employee not the total for all employees. Furthermore, the question concerning salaries was apparently phrased ambiguously and could have been interpreted as either the potential full-time weekly salary or the actual salary paid. Physicians also reported as another variable the total annual wages paid to all non-physician employees and we used this variable rather than the sum of the five separate variables because of the errors in these separate variables. Note total wages excludes fringe benefits and other employee costs such as social security payments. Thus, the total is a downwardly biased estimate of the actual cost of employee labor.

Answers to two other cost categories present problems which are more difficult to resolve. Apparently several physicians responded to both the rent and medical equipment questions not with annual costs or even accelerated tax depreciation but with the purchase price. With equipment, 233 physicians answered that their firm's annual medical equipment expenses exceeded $7000 per physician; 77 answered that equipment expenses exceeded $16,000 per physician. It is possible that some of these firms had extensive laboratories but the Survey intentionally focused on the small non-clinic practices so even though the responses to the question could be accurate, the type of practice is outside the Survey's intended scope. The answer to the rent question presents a similar problem. The variation is again considerable with a distribution having a large right tail: 50 physicians reported that their firms spent more than $48,000 per physician annually on rent. An analysis of the geographic distribution of these physicians showed that many of them were in SMSAs with populations greater than one million but this would explain only some of these high rent responses.

However, sources other than mis-interpretation of the question can lead to errors in the data. Errors in data transmission can occur at any of several points in collecting the data for the Survey; for example, errors can arise in coding through the addition or deletion of one or more digits to the actual response. If one were to implement a simple rule which would eliminate those cases with unreasonably high values for certain cost variables, then one would eliminate cases where errors arose because of mis-interpretation and cases where errors arose at some point in data transmission. If the transmission errors are symetrically distributed, then arbitrarily eliminating those cases with large values could produce somewhat downwardly biased estimates because any cases with an omitted digit will remain. (If coding errors occurred randomly and if the same rule for case elimination is not applied to all cost variables, then elimination of the high cost cases for just some variables but not others will also bias the estimates of the cost shares in the Index.)

However, if data transmission errors are small in number relative to errors caused by mis-interpretation, then use of a systematic rule which eliminates, for example, those cases with very high costs will not seriously bias the estimates. This assumption of relatively low transmission errors appears to be correct because of the rather small standard deviations in the cost share ratios; a large number of added or omitted digits would have produced large variation in the cost ratios as well as the cost variables themselves.

Such a systematic rule was used to eliminate cases with very high costs and tables in this section show cost levels and ratios both before and after this editing was performed. In those tables without editing, the sample comprises all physicians for whom complete cost information was available. Cases are deleted where information is missing on one or more variables except in the case of auto expenses where the specialty-specific mean value was imputed if the value was missing. (A regression with auto expenses as the dependent variable was estimated with travel hours as one of the independent variables but its coefficient though highly significant implied a rather low cost per mile of four cents, and unfortunately travel hours itself was missing for many cases.)

In those tables subject to editing, cases were eliminated if values for selected variables exceeded three standard deviations above the mean. A possible objection to this approach is that the cost variables are probably not normally distributed but right-skewed and the median is a more representative statistic for the distribution. However, using the mean rather than the median produces a cutoff further to the right and reduces the probability of a Type I error (rejecting or eliminating an error-free observation). In the next year, we will use a more systematic editing approach which does not rely on the mean and variance.

The Table below summarizes the results of the application of the three standard deviation rule; the first column lists the variable (where per md means the firm-wide costs were divided by the number of physicians), the second lists the cutoff values and the third the number of cases excluded through use of this rule.

variable	cutoff	number
rent per md	$48,000	50
equipment per md	$16,000	77
supplies per md	$26,000	62
employee average salary	$22,000	28
number of emloyees	40	18
office visits per hour	12	28
physician outside income (%)	35	115

The cutoff for the first three cost variables seems reasonable because the value of each cutoff is quite large; note that this value is the minimum of all values excluded. Those cases excluded because of high rent values were reported to have a minimum of $4,000 per physician in monthly rent payments; such a minimum seems very high. A possible explanation might lie in response or coding or in a mis-interpretation of the question: a full or partial purchase price was given not the annual expense. Similarly equipment expenses above $16,000 per physician for office-based practices would seem to reflect the price of purchases, not annual depreciation.

The employee average salary cutoff is five standard deviations above the mean; use of the three standard deviation rule would impose a cutoff at $17,000. For the average salary to exceed $22,000, it either reflects a data error or includes physician employees whose average salary for the sample as a whole was $26,000. Exclusion of the firms with over 40 employees possibly eliminated some cases with valid observations, but this rule was imposed also to exclude the very large clinic practices or practices which operated extensive adjacent laboratories. The focus of the Suvey was on the smaller practice.

The cutoff on visits per hour was at four standard deviations. For a physician to see at least 12 patients per hour means that he or she is seeing each one for an average of much less than five minutes each. The response on visits or hours was probably erroneous or the visits included some in which a staff member but not the physician saw the patient, but the question was intended to determine the number of visits which the physician personally conducted.

The exclusion of cases with over 35 percent of their net income from outside their office practice was intended to eliminate those physicians who were not primarily office-based. Later consideration of this rule indicated that it might have excluded some surgeons unnecessarily and this rule will be revised.

The remaining criteria eliminated cases which were not central to the analysis. All completely prepaid practices were excluded because such a practice does not participate in the Medicare program and is structured differently. This dropped 19 cases. Also, 24 physicians reporting no rent were excluded because absence of rent payments strongly suggests the physicians were hospital-based. Furthermore, all physician employees as respondents were dropped because they were not asked most of the cost questions. Finally, three pediatric surgeons were also dropped (specialty number 18, not separately listed by N.O.R.C.) because re-assignment to pediatrics was questionable given that N.O.R.C. had chosen to categorize them separately.

Exclusion of the case because of a data error in one value can severely reduce the sample size when several exclusionary rules are applied together. The largest reduction in sample size occurs because of missing values; since no imputation of values was done in cases with missing data, only those cases with data on all cost variables were included in the analysis. This restriction reduced the sample size from 4822 to 2900. The impact of applying the above rules was to reduce the sample size by about 9 percent from 2900 to 2632. More restrictive rules or inclusion of more variables will reduce the sample size further. It might seem that the impact of such rules will be diminished by direct examination of sorted listings of the variable of interest and related variables because some of the values may appear to be more reasonable when considered in light of other variable values. Of course, cases not excluded under the application of the simple rule may be dropped when examination of the full set of variables occurs. When the two effects are netted out, it is likely that more cases would be excluded with a thorough direct examination of the sorted listed values.

The tables at the end of this Section display first the cost variable means (Tables II-1 to II-8), second the cost shares (Tables II-9 to II-18) and third results of tests on the cost shares (Table II-19). The legend at the bottom of each table describes the methods used in constructing that table. These notes refer to five separate issues: (1)the basis of the cost computation (per physician or firm level); (2)the calculation of net income (whether including or excluding pensions as a separate item); (3)the calculation of overhead expenses (whether it is imputed at 10.8 percent or equipment is used as a proxy); (4)the presence of editing (either no editing or the editing described above); and (5)the use of weights (either no weights, the selection/response weight or the product of that weight and Medicare participation).

These issues were all discussed above but they will be reviewed in order. First, two bases for the cost computation are either per physician or for the firm. The first approach requires allocating expenses among members in a group by dividing the costs for rent, overhead, supplies and employee salaries by the number of physicians in the group while the second requires multiplying the expenditures for auto, malpractice premiums and net income by the number of physicians. The second method assumes a uniformity in certain expenses across physicians while the first does not but it possibly introduces bias in the measure of economies of scale by dividing through by the number of physicians.

The second and third issues address the measurement of expenses in two separate categories, net income and overhead. The issue for net income is the inclusion of pension payments as a separate item. Where the note in the legend indicates that pensions as a separate item have been excluded from net income, it means that the net income variable includes only the response to the net income question in the Survey but does not include the response to the separate question on pensions. Where the note indicates that pensions are included in net income, the net income variable is the sum of net income and pension payments. With respect to overhead, the notes state that either the expense for equipment in 1978 was used as a partial proxy for overhead or that overhead expenses were imputed at 10.8 percent of total expenses for all physicians. The first proxy includes only one of the remaining items in the overhead category while the second approach includes all overhead expenses but is based on the older 1975 Survey and does not vary across specialties, two strong limitations.

The last two issues focus on the presence of editing and the weighting of the observations. With respect to editing, the notes indicate one of two alternatives: either no editing occurred (denoted by the phrase, all cases with complete cost data) or high cost cases were removed using the method discussed above (denoted by the phrase, edited cases). Three weighting alternatives exist: first, no weighting; second, weighting by the selection and response probability; and third weighting by the product of this selection and response probability and the percent of patients with Part B Medicare coverage, an estimate of the extent of the participation in the Medicare program. The weighting by the selection and response probability adjusts for the sampling design which was not proportionate to population size; the number of observations for the internal medicine and surgery specialties was increased to account for the greater variation in their practice characteristics.

Tables II-1 to II-3 present the seven cost categories and total cost for the entire sample and for each of the fifteen specialties for the per physician cost approach. The cost categories match the breakdown in the Medicare Economic Index: rent, overhead, supplies, employee salaries, auto expenses, malpractice premiums and physician net income. The last column on the left in each table is total cost which is simply the sum of the seven separate cost categories. Each pair of entries is the mean cost and beneath it in parentheses the standard deviation. The notes at the bottom indicate which of the options are in effect for that table.

Tables II-2 and II-3 compare the approach of using only equipment as the overhead estimate and excluding pension payments from net income (Table II-2) with the approach of using the 10.8 percent overhead imputation and the inclusion of pension payments. As expected, the expense for overhead is over $10,000 higher in Table II-3 than in Table II-2 for most specialties and net income is from $8,000 to $15,000 higher. The combined effect of these two changes is to raise total expenses from $97,706 in Table II-2 to $116,847 in Table II-3, an increase of over $19,000 or almost twenty percent. Some other minor differences appear in the cost of other items because the set of observations differs slightly due to differing numbers of cases with missing values.

The impact of editing can be gauged by comparing Tables II-1 and II-3; the assumptions for the construction of both Tables are the same except for the editing done in Table II-3. The editing culled observations with very high costs in rent, equipment, supplies and employee salaries. However, because both Tables use the imputed overhead method, the effect of the editing of the equipment variable does not appear. For the entire sample, total expenses fell from $120,119 to $116,847 due to editing, a decline of about three percent. Supplies showed the largest percentage decline of about fifteen percent and rent declined about ten percent.

An analysis of variance was completed separately on six of the seven cost categories in Table II-3 with specialty as the independent variable. All costs differed significantly among the specialties. Examination of the specialty-specific cost means in Table II-3 shows that the variation in some costs is much greater than others. In particular, the means of net income vary greatly from $54,036 for general practice to $102,723 for orthopedic surgery. The net income of the surgeons exceeds that of the internists by an amount which ranges from $2000 to $40,000, depending on the combination of specialties being compared. Also, malpractice insurance premiums are, as expected, much higher for surgeons--over twice as large as those for internists-- and within these specialties, the premiums for orthopedic surgeons and neurological surgeons are even higher, nearly double the premiums for the remaining surgeons. Finally, note that practice costs other than net income are higher for surgeons, a somewhat surprising result given the hospital support available to the surgeons although much of the difference is attributable to the higher malpractice costs.

Tables II-4 to II-8 display the cost category means for firms of increasing size using the firm-wide cost definitions discussed above. Table II-4 shows the means for solos; Table II-5 for two person groups, etc. Reporting these firm-wide costs for the entire sample would produce a table with costs for the average size firm which given the sample distribution of firm size is between a solo and a two person firm. Separating the firms by size provides a result which can be interpreted more directly. Note that as firm size increases, net income per physician rises from $60,182 to for solos to $80,812 for two-person groups to $91,232 for three person groups. Expenses for other than net income are $49,270 for solos, $56,287 for two person groups, and $58,832 for three person groups. The increase in these expenses is largely due to increases in employee salaries; larger firms either have more employees per physician or employees with more training and experience. Other expenses such as rent appear to increase proportionately with the growth in firm size.

The remaining Tables II-9 to II-18 in this Section present the cost shares. These cost categories in these tables matches the breakdown in the Medicare Economic Index and therefore these cost shares can function as weights in that Index. The categories are the same as in the previous tables in this Section: rent, overhead, supplies, non-physician employee salaries, auto expenses, malpractice premiums and net income. Each entry is simply the ratio of a given cost to total cost. Beneath each entry is the standard deviation of the ratio.

Table II-9 presents the cost shares using the firm-wide costs with equipment costs as a proxy for overhead costs and not including pensions in net income. Table II-10 estimates overhead as 10.8 percent of total costs, but still excludes pension payments while Table II-11 uses the 10.8 percent and includes pensions. All three Tables are based on the unedited sample but do weight the observations with the probability for differential selection and response (N.O.R.C.'s "final weight"). Comparison of these three tables shows that physician net income constitutes between 50 and 60 percent of total expenses; for the entire sample, it equals nearly 56 percent using the 10.8 percent overhead estimate and including pension payments which are the assumptions of Table II-11. In that Table, the share for employee salaries is 14.65 percent, rent 8.95, supplies 3.57, auto 2.34 and malpractice 3.76. The share for rent is fairly constant across specialities but malpractice is of course much greater for surgeons. Note that general practitioners have the largest share among all specialties for employee salaries.

Table II-12 presents the shares using the same assumptions as Table II-11 but aggregates the specialties into three rather than fifteen categories: general practice, internal medicine and its specialties and surgery and its specialties. The same patterns appear as in Table II-11 with net income approximately 55 percent of total costs and employee salaries ranging between 13 and 17 percent.

Tables II-13 and II-14 display the results based on the edited sample which primarily excluded cases with very high rent, supplies or employee salaries. As expected, these Tables show that net income and malpractice premiums now have larger shares withnet income rising to 56.6 percent from 55.9 percent and malpractice increasing to 3.8 percent from 3.76. Table II-15 incorporates the same assumptions as Table II-14 except that the observations are weighted by both the response probability and the extent of Medicare participation. The use of this second weight means that the sample is a better estimator of the characteristics of the physicians serving the Medicare population. The change in the cost shares is very slight with the share going to net income dropping to 55.89 percent from 56.64 and employee salaries rising from 14.56 to 15.03 percent.

The last three Tables in this Section separate the sample into three groups: solo practitioners, groups with equal income and from the same specialty, and groups with unequal income or from different specialties. A comparison shows that the heterogenous group (unequal specialties or unequal incomes) has the largest share of net income at 60.51 percent with the homogenous group at 58.3 and solos at 55.43. The other main difference appears in the share of expenses going toward rent with solos spending 9.52

percent, the homogenous group 7.06 percent and the heterogenous group 5.99 percent. Malpractice varies between the two types of groups; it is 3.65 for the heterogenous groups and 4.42 for the others.

In general, the cost shares do not vary that greatly from on Table to another, but this is a qualitative not a statistical conclusion. Table II-19 displays the results of two Hotelling tests both of which that the changing the assumptions does alter the cost shares significantly. The top half of this Table tests whether the editing affected the cost shares by testing for differences between those cases remaining in the sample and those eliminated. As expected, those culled out had a much higher share in rent (12.2 percent versus 8.3 percent) and larger shares for supplies and employee salaries. The overall Hotelling statistic is 163.36 which is significant at the .00001 level. The bottom half of Table II-19 tests whether a significant difference exists between the per-physician and the firm-wide basis for cost share definition. Somewhat surprisingly, this difference is also quite strong with an overall Hotelling statistic of 97.76. The greatest difference is in net income, but the small standard errors are driving the results of this test.

TABLE II-1

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	2718	10312 (13033)	12973 (6799)	4416 (6835)	18572 (17825)	2347 (1527)	4273 (4461)	67224 (39286)	120119 (62955)
ALLERGY	21	13000 (11728)	14506 (7105)	7101 (7550)	24236 (17862)	2340 (1573)	2490 (2271)	70636 (39113)	134311 (65794)
CARDIOVASCULAR DIS.	57	11549 (9131)	14069 (4556)	3443 (3592)	17244 (9740)	2387 (1455)	3478 (2556)	78095 (27872)	130266 (42187)
DERMATOLOGY	70	11020 (7351)	12814 (5073)	3952 (4577)	19156 (15562)	1953 (1361)	2668 (1971)	67081 (29221)	118646 (46978)
GASTROENTEROLOGY	19	9825 (7281)	13069 (4411)	3132 (2785)	16302 (10720)	2005 (1077)	2970 (2944)	73703 (28049)	121009 (40849)
GENERAL PRACTICE	771	10244 (17766)	11486 (6294)	5634 (6734)	19160 (14361)	2334 (1487)	2731 (2549)	54760 (34065)	106352 (58284)
GENERAL SURGERY	261	9498 (7973)	14873 (7853)	3259 (6173)	18034 (21918)	2718 (1759)	7471 (4684)	81858 (48160)	137713 (72712)
INTERNAL MEDICINE	395	9867 (8207)	12201 (5590)	5005 (7682)	18706 (12909)	2366 (1562)	2678 (2550)	62145 (32760)	112970 (51766)
NEUROLOGICAL SURGERY	29	9766 (6546)	17821 (5710)	1083 (1809)	20346 (20114)	2855 (1875)	10555 (6875)	102581 (40082)	165011 (52873)
OBSTETRICS-GYNECOLOGY	241	10921 (9691)	15753 (6926)	4110 (8051)	20467 (13528)	2653 (1668)	8671 (5079)	83284 (44864)	145862 (64136)
OPHTHAMOLOGY	153	12123 (13830)	15081 (8132)	6318 (11582)	23249 (20369)	2280 (1285)	4296 (3533)	76292 (48552)	139643 (75298)
ORTHOPEDIC SURGERY	118	14329 (9824)	19318 (6955)	5768 (6229)	27902 (14609)	2429 (1480)	11331 (6799)	97788 (43928)	178867 (64405)
OTOLARYNGOLOGY	66	11954 (13890)	14708 (7104)	3583 (5620)	21112 (16400)	2081 (1232)	6970 (4810)	75772 (41530)	136183 (65781)
PEDIATRICS	187	10968 (18796)	11425 (5528)	4791 (4680)	17917 (22724)	2175 (1367)	2192 (2419)	56319 (26830)	105791 (51190)
PSYCHIATRY	263	7308 (6606)	9156 (5338)	388 (1272)	8268 (24681)	1889 (1453)	1272 (1201)	56499 (26850)	84783 (49427)
UROLOGY	66	9532 (7467)	15505 (5526)	3627 (3602)	17522 (18688)	2631 (1407)	6254 (3361)	88490 (34447)	143563 (51174)

COST LEVELS ARE COMPUTED ON A PER PHYSICIAN BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
SAMPLE HAS ALL CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-2

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	2632	9107 (6756)	1290 (2360)	3781 (4398)	17863 (14654)	2329 (1511)	4375 (4570)	58958 (31918)	97706 (46295)
ALLERGY	17	10899 (8314)	933 (1666)	5651 (4508)	23112 (16997)	2085 (1504)	2256 (2103)	55789 (28877)	100729 (43823)
CARDIOVASCULAR DIS.	51	11125 (7617)	2312 (3225)	3300 (3505)	18756 (9248)	2511 (1454)	3663 (2632)	67605 (21374)	109275 (33230)
DERMATOLOGY	70	11030 (7370)	803 (1110)	3906 (4582)	19086 (15576)	1926 (1349)	2680 (1969)	58662 (23381)	98097 (37729)
GASTRO-ENTEROLOGY	20	9674 (7369)	2029 (2586)	3148 (2752)	16863 (11215)	1954 (1019)	3030 (2961)	65459 (23077)	102161 (33506)
GENERAL PRACTICE	742	8053 (6594)	1015 (2090)	4938 (4828)	19321 (14083)	2314 (1466)	2789 (2673)	49342 (28289)	87774 (42981)
GENERAL SURGERY	256	8869 (6302)	1271 (2288)	2676 (3230)	15241 (13797)	2635 (1700)	7622 (4721)	71737 (40167)	110054 (51857)
INTERNAL MEDICINE	378	9158 (6353)	1414 (2292)	4032 (4400)	18142 (11762)	2343 (1530)	2596 (2591)	55382 (25987)	93070 (38298)
NEUROLOGICAL SURGERY	29	9592 (4912)	1057 (1655)	1059 (1783)	17985 (9340)	2588 (1433)	11436 (8708)	87191 (33900)	130910 (37410)
OBSTETRICS-GYNECOLOGY	248	10074 (6562)	1697 (2605)	3436 (3493)	20138 (11429)	2679 (1694)	8914 (5556)	69139 (35030)	116079 (46347)
OPHTHAMOLOGY	143	10621 (7169)	2695 (3633)	3761 (5420)	20128 (15231)	2274 (1310)	4620 (3579)	63063 (37845)	107165 (52676)
ORTHOPEDIC SURGERY	112	13837 (9137)	1886 (3048)	5617 (5388)	27200 (14073)	2425 (1509)	10831 (5935)	86278 (38716)	148077 (50515)
OTOLARYNGOLOGY	63	10307 (6103)	2021 (2789)	3004 (4014)	20178 (16247)	2025 (1239)	6844 (4748)	65681 (33281)	110063 (48627)
PEDIATRICS	189	9225 (6839)	1009 (1961)	4735 (4248)	16787 (10446)	2194 (1372)	2320 (2552)	51110 (21982)	87383 (32495)
PSYCHIATRY	245	6987 (5382)	266 (808)	363 (1045)	7582 (21518)	1868 (1459)	1237 (1041)	49908 (22396)	68214 (37632)
UROLOGY	67	8533 (5426)	1756 (2624)	3679 (3511)	16544 (10373)	2622 (1390)	6480 (3662)	73608 (25540)	113225 (35290)

COST LEVELS ARE COMPUTED ON A PER PHYSICIAN BASIS
MD NET INCOME EXCLUDES PENSIONS AS A SEPARATE ITEM
OVERHEAD ONLY INCLUDES EQUIPMENT COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-3

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	2467	9179 (6872)	12619 (6274)	3756 (4344)	17661 (14534)	2325 (1519)	4291 (4449)	67013 (38768)	116847 (58098)
ALLERGY	15	11110 (8583)	13036 (5768)	5584 (4606)	22463 (16951)	2181 (1537)	2372 (2183)	63958 (33138)	120709 (53410)
CARDIOVASCULAR DIS.	49	11213 (7739)	14405 (4516)	3334 (3563)	18533 (9341)	2475 (1460)	3673 (2677)	79745 (27806)	133390 (41816)
DERMATOLOGY	70	11042 (7388)	12705 (4989)	3919 (4591)	19028 (15597)	1931 (1351)	2687 (1973)	66322 (28432)	117636 (46195)
GASTRO-ENTEROLOGY	19	9834 (7406)	13144 (4438)	3182 (2816)	16461 (10887)	1980 (1033)	3019 (2992)	74084 (28162)	121707 (41092)
GENERAL PRACTICE	700	8073 (6654)	10995 (5582)	4865 (4721)	18818 (13505)	2311 (1492)	2701 (2535)	54036 (33107)	101803 (51692)
GENERAL SURGERY	240	9012 (6407)	14301 (6905)	2721 (3241)	15361 (14200)	2655 (1726)	7536 (4752)	80832 (46023)	132421 (63936)
INTERNAL MEDICINE	350	9278 (6493)	11940 (5306)	3948 (4244)	18192 (11606)	2354 (1573)	2670 (2651)	62175 (32300)	110559 (49135)
NEUROLOGICAL SURGERY	28	9407 (4920)	17531 (5280)	1063 (1818)	18428 (9453)	2624 (1463)	10543 (7052)	102723 (40667)	162322 (48890)
OBSTETRICS-GYNECOLOGY	228	10168 (6754)	15501 (6671)	3484 (3527)	19807 (10999)	2658 (1658)	8689 (5119)	83219 (44875)	143528 (61770)
OPHTHAMOLOGY	131	10907 (7318)	14247 (7453)	4026 (5596)	20194 (14557)	2272 (1305)	4537 (3706)	75734 (49618)	131920 (69010)
ORTHOPEDIC SURGERY	103	14006 (9457)	19294 (6676)	5314 (5141)	27163 (14486)	2420 (1499)	11047 (6090)	99402 (43865)	178648 (61814)
OTOLARYN-GOLOGY	59	10201 (6175)	14461 (6781)	3041 (4128)	20751 (16614)	2013 (1245)	6917 (4860)	76511 (40965)	133898 (62792)
PEDIATRICS	176	9319 (6961)	11151 (4453)	4783 (4309)	16661 (10510)	2163 (1320)	2186 (2447)	56984 (26873)	103249 (41237)
PSYCHIATRY	236	7049 (5454)	9003 (4927)	358 (1058)	7457 (21709)	1857 (1446)	1238 (1057)	56401 (26339)	83366 (45624)
UROLOGY	62	8661 (5595)	15339 (5049)	3733 (3647)	16713 (10377)	2633 (1416)	6351 (3416)	88595 (33314)	142028 (46751)

COST LEVELS ARE COMPUTED ON A PER PHYSICIAN BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-4

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	1020	9437 (6996)	11821 (6259)	4066 (4535)	17910 (13976)	2266 (1464)	3767 (4011)	60182 (37848)	109452 (57958)
GENERAL PRACTICE	428	8178 (6790)	10314 (5937)	4749 (4705)	18098 (14201)	2183 (1367)	2420 (2358)	49558 (33433)	95504 (54978)
INTERNAL MEDICINE	291	9957 (6898)	11612 (4915)	3744 (4065)	16978 (10986)	2284 (1583)	2536 (2128)	60410 (29981)	107524 (45513)
SURGERY SPECIALITES	301	10724 (7101)	14161 (7124)	3406 (4602)	18543 (16076)	2367 (1476)	6868 (5351)	75052 (44969)	131124 (65969)

THE FIRMS INCLUDED IN THIS TABLE HAVE 1 PHYSICIAN
COST LEVELS ARE COMPUTED ON A FIRM-WIDE BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-5

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	184	17970 (13107)	29614 (12029)	9180 (11016)	38813 (25682)	5422 (3838)	11573 (9302)	161623 (83732)	274198 (111379)
GENERAL PRACTICE	55	17636 (13279)	27123 (9079)	12695 (13361)	39608 (19318)	6256 (4297)	7906 (6420)	139906 (73652)	251133 (84070)
INTERNAL MEDICINE	46	19473 (15555)	29959 (13850)	9754 (11398)	45828 (36143)	4426 (3107)	6909 (8083)	161043 (86527)	277395 (128240)
SURGERY SPECIALITES	83	17361 (11528)	31071 (12529)	6539 (8156)	34410 (21505)	5421 (3792)	16575 (9140)	176309 (86196)	287688 (116013)

THE FIRMS INCLUDED IN THIS TABLE HAVE 2 PHYSICIANS
COST LEVELS ARE COMPUTED ON A FIRM-WIDE BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-6

PHYSICIAN COST CATEGORY MEANS

SPECIALTY

(STANDARD DEVIATIONS IN PARENTHESES)

	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	106	27670 (18721)	48622 (18159)	13117 (12549)	62987 (36830)	7629 (4310)	16469 (15530)	273695 (115470)	450191 (168134)
GENERAL PRACTICE	31	22520 (16274)	42685 (8136)	16113 (9538)	68651 (34761)	8702 (5142)	8952 (7361)	227599 (55351)	395226 (75340)
INTERNAL MEDICINE	28	30750 (22998)	42783 (21843)	12065 (12374)	59667 (42444)	7089 (3947)	9852 (9718)	233922 (125535)	396132 (202249)
SURGERY SPECIALITES	47	29272 (17016)	56162 (18120)	11736 (14230)	61183 (35008)	7232 (3848)	25546 (17819)	328872 (117308)	520007 (167777)

THE FIRMS INCLUDED IN THIS TABLE HAVE 3 PHYSICIANS
COST LEVELS ARE COMPUTED ON A FIRM-WIDE BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-7

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	92	35577 (28038)	62568 (24848)	15154 (12383)	84575 (45475)	9689 (5171)	21438 (16385)	350319 (166232)	579323 (230068)
GENERAL PRACTICE	31	34240 (28153)	49648 (15435)	16362 (7852)	85145 (41798)	8829 (4116)	13936 (12184)	251533 (91193)	459697 (142914)
INTERNAL MEDICINE	18	28158 (15909)	59932 (17182)	14226 (13180)	75085 (30336)	10988 (5952)	10579 (7423)	355940 (124779)	554911 (159096)
SURGERY SPECIALITES	44	39529 (31408)	72845 (28411)	14669 (14686)	88006 (52823)	9776 (5503)	31177 (16192)	418471 (188132)	674477 (263057)

THE FIRMS INCLUDED IN THIS TABLE HAVE 4 PHYSICIANS
COST LEVELS ARE COMPUTED ON A FIRM-WIDE BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II-8

PHYSICIAN COST CATEGORY MEANS

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	OVER-HEAD	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME	TOTAL
OVERALL	79	59430 (57127)	105899 (38994)	25871 (21049)	147948 (77260)	15104 (8326)	34012 (27211)	592255 (251364)	980523 (361051)
GENERAL PRACTICE	23	26852 (25030)	83157 (27795)	25109 (20289)	130082 (81586)	12929 (8511)	22239 (15046)	467583 (184544)	769953 (257357)
INTERNAL MEDICINE	25	64249 (38641)	102091 (30892)	29025 (24114)	168020 (62666)	13379 (6110)	22598 (17136)	545897 (181744)	945262 (266034)
SURGERY SPECIALITES	31	78424 (75404)	125823 (42332)	23965 (19379)	145510 (82861)	18077 (9015)	51733 (31281)	721467 (285112)	1165002 (391954)

THE FIRMS INCLUDED IN THIS TABLE HAVE 5 OR MORE PHYSICIANS
COST LEVELS ARE COMPUTED ON A FIRM-WIDE BASIS
MD NET INCOME INCLUDES BOTH NET INCOME AND PENSIONS
OVERHEAD IS IMPUTED AT 10.8 PERCENT OF TOTAL COSTS
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II - 09

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	EQUIP-MENT	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2892	0.1032 (0.0787)	0.0156 (0.0333)	0.0416 (0.0505)	0.1735 (0.1052)	0.0273 (0.0214)	0.0450 (0.0458)	0.5939 (0.1481)
ALLERGY	24	0.1149 (0.0794)	0.0162 (0.0376)	0.0644 (0.0519)	0.2125 (0.0962)	0.0211 (0.0139)	0.0254 (0.0269)	0.5455 (0.1339)
CARDIOVASCULAR	60	0.1045 (0.0664)	0.0220 (0.0362)	0.0305 (0.0289)	0.1649 (0.0875)	0.0245 (0.0157)	0.0316 (0.0180)	0.6218 (0.1293)
DERMATOLOGY	72	0.1110 (0.0558)	0.0105 (0.0193)	0.0388 (0.0444)	0.1852 (0.0815)	0.0207 (0.0139)	0.0292 (0.0252)	0.6045 (0.1101)
GASTROENTEROLOGY	20	0.0949 (0.0720)	0.0250 (0.0419)	0.0298 (0.0251)	0.1546 (0.0833)	0.0219 (0.0159)	0.0296 (0.0261)	0.6441 (0.1317)
GENERAL PRACTICE	814	0.1063 (0.0958)	0.0121 (0.0240)	0.0587 (0.0539)	0.2048 (0.1105)	0.0311 (0.0248)	0.0350 (0.0374)	0.5520 (0.1458)
GENERAL SURGERY	280	0.0915 (0.0725)	0.0133 (0.0259)	0.0269 (0.0329)	0.1426 (0.0926)	0.0265 (0.0195)	0.0779 (0.0620)	0.6213 (0.1375)
INTERNAL MEDICINE	425	0.1048 (0.0705)	0.0204 (0.0442)	0.0486 (0.0553)	0.1837 (0.0896)	0.0278 (0.0213)	0.0307 (0.0310)	0.5839 (0.1419)
NEUROLOGY SURGERY	31	0.0770 (0.0447)	0.0144 (0.0323)	0.0084 (0.0142)	0.1418 (0.0807)	0.0222 (0.0161)	0.0903 (0.0651)	0.6459 (0.1119)
OB-GYN	262	0.0927 (0.0652)	0.0159 (0.0264)	0.0302 (0.0312)	0.1730 (0.0843)	0.0246 (0.0180)	0.0830 (0.0575)	0.5805 (0.1249)
OPTHAMOLOGY	167	0.1045 (0.0685)	0.0379 (0.0653)	0.0482 (0.0874)	0.1889 (0.1052)	0.0240 (0.0170)	0.0427 (0.0356)	0.5539 (0.1487)
ORTHOPED SURGERY	127	0.0966 (0.0597)	0.0191 (0.0357)	0.0362 (0.0290)	0.1894 (0.0938)	0.0172 (0.0108)	0.0797 (0.0491)	0.5617 (0.1210)
OTOLARYNGOLOGY	70	0.1102 (0.0753)	0.0270 (0.0434)	0.0322 (0.0443)	0.1693 (0.0897)	0.0215 (0.0157)	0.0642 (0.0430)	0.5756 (0.1351)
PEDIATRICS	199	0.1141 (0.0835)	0.0111 (0.0209)	0.0538 (0.0481)	0.1879 (0.0912)	0.0278 (0.0215)	0.0277 (0.0255)	0.5777 (0.1254)
PSYCHIATRY	272	0.1109 (0.0776)	0.0047 (0.0154)	0.0055 (0.0142)	0.0789 (0.1146)	0.0306 (0.0246)	0.0210 (0.0230)	0.7484 (0.1415)
UROLOGY	71	0.0851 (0.0534)	0.0147 (0.0226)	0.0317 (0.0293)	0.1407 (0.0813)	0.0247 (0.0143)	0.0594 (0.0356)	0.6437 (0.1103)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS EXCLUDE PENSION WITH EQUIPMENT COSTS AS OVERHEAD
SAMPLE HAS ALL CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION PROBABILITIES

TABLE II - 10

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2892	0.0937 (0.0717)	0.0378 (0.0462)	0.1575 (0.0954)	0.0247 (0.0193)	0.0408 (0.0414)	0.5375 (0.1306)
ALLERGY	24	0.1042 (0.0713)	0.0584 (0.0466)	0.1925 (0.0860)	0.0191 (0.0125)	0.0231 (0.0249)	0.4947 (0.1205)
CARDIOVASCULAR	60	0.0957 (0.0606)	0.0285 (0.0288)	0.1504 (0.0794)	0.0223 (0.0141)	0.0291 (0.0168)	0.5662 (0.1125)
DERMATOLOGY	72	0.1002 (0.0506)	0.0350 (0.0400)	0.1670 (0.0731)	0.0186 (0.0125)	0.0264 (0.0228)	0.5448 (0.0977)
GASTROENTEROLOGY	20	0.0871 (0.0656)	0.0273 (0.0229)	0.1419 (0.0762)	0.0201 (0.0143)	0.0271 (0.0236)	0.5885 (0.1127)
GENERAL PRACTICE	814	0.0961 (0.0866)	0.0533 (0.0495)	0.1851 (0.0995)	0.0281 (0.0224)	0.0316 (0.0335)	0.4980 (0.1295)
GENERAL SURGERY	280	0.0828 (0.0652)	0.0245 (0.0303)	0.1291 (0.0836)	0.0240 (0.0176)	0.0703 (0.0559)	0.5613 (0.1220)
INTERNAL MEDICINE	425	0.0960 (0.0665)	0.0446 (0.0513)	0.1678 (0.0822)	0.0253 (0.0192)	0.0280 (0.0280)	0.5303 (0.1235)
NEUROLOGY SURGERY	31	0.0697 (0.0401)	0.0077 (0.0130)	0.1283 (0.0722)	0.0204 (0.0157)	0.0817 (0.0584)	0.5842 (0.0967)
OB-GYN	262	0.0842 (0.0593)	0.0274 (0.0284)	0.1569 (0.0762)	0.0223 (0.0163)	0.0754 (0.0524)	0.5258 (0.1104)
OPTHAMOLOGY	167	0.0966 (0.0632)	0.0442 (0.0785)	0.1756 (0.0980)	0.0223 (0.0156)	0.0395 (0.0325)	0.5138 (0.1344)
ORTHOPED SURGERY	127	0.0881 (0.0552)	0.0330 (0.0265)	0.1726 (0.0862)	0.0157 (0.0097)	0.0721 (0.0438)	0.5104 (0.1067)
OTOLARYNGOLOGY	70	0.1019 (0.0717)	0.0296 (0.0400)	0.1556 (0.0827)	0.0199 (0.0150)	0.0591 (0.0399)	0.5259 (0.1153)
PEDIATRICS	199	0.1031 (0.0756)	0.0487 (0.0435)	0.1694 (0.0819)	0.0251 (0.0194)	0.0250 (0.0230)	0.5208 (0.1116)
PSYCHIATRY	272	0.0994 (0.0695)	0.0050 (0.0132)	0.0707 (0.1028)	0.0275 (0.0223)	0.0189 (0.0212)	0.6704 (0.1254)
UROLOGY	71	0.0773 (0.0495)	0.0288 (0.0267)	0.1277 (0.0747)	0.0223 (0.0129)	0.0536 (0.0321)	0.5822 (0.0968)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS EXCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
SAMPLE HAS ALL CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION PROBABILITIES

TABLE II - 11

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2713	0.0895 (0.0714)	0.0357 (0.0443)	0.1465 (0.0915)	0.0234 (0.0190)	0.0376 (0.0390)	0.5593 (0.1302)
ALLERGY	21	0.0993 (0.0701)	0.0546 (0.0455)	0.1761 (0.0833)	0.0187 (0.0119)	0.0227 (0.0250)	0.5205 (0.1261)
CARDIOVASCULAR	57	0.0886 (0.0601)	0.0246 (0.0231)	0.1332 (0.0730)	0.0200 (0.0128)	0.0263 (0.0162)	0.5993 (0.1058)
DERMATOLOGY	70	0.0953 (0.0498)	0.0338 (0.0392)	0.1555 (0.0705)	0.0175 (0.0114)	0.0249 (0.0225)	0.5651 (0.0996)
GASTROENTEROLOGY	19	0.0838 (0.0658)	0.0256 (0.0224)	0.1291 (0.0709)	0.0190 (0.0139)	0.0255 (0.0233)	0.6090 (0.1120)
GENERAL PRACTICE	770	0.0942 (0.0870)	0.0513 (0.0478)	0.1738 (0.0954)	0.0273 (0.0223)	0.0301 (0.0330)	0.5153 (0.1307)
GENERAL SURGERY	261	0.0786 (0.0637)	0.0221 (0.0255)	0.1210 (0.0817)	0.0226 (0.0171)	0.0650 (0.0539)	0.5826 (0.1201)
INTERNAL MEDICINE	394	0.0917 (0.0658)	0.0413 (0.0478)	0.1575 (0.0779)	0.0241 (0.0192)	0.0267 (0.0258)	0.5508 (0.1176)
NEUROLOGY SURGERY	29	0.0628 (0.0375)	0.0071 (0.0125)	0.1203 (0.0706)	0.0192 (0.0156)	0.0696 (0.0496)	0.6130 (0.0984)
OB-GYN	241	0.0787 (0.0599)	0.0257 (0.0274)	0.1424 (0.0741)	0.0202 (0.0154)	0.0681 (0.0499)	0.5569 (0.1150)
OPTHAMOLOGY	153	0.0902 (0.0634)	0.0444 (0.0796)	0.1628 (0.0919)	0.0206 (0.0151)	0.0344 (0.0298)	0.5396 (0.1356)
ORTHOPED SURGERY	118	0.0829 (0.0540)	0.0295 (0.0240)	0.1593 (0.0808)	0.0145 (0.0091)	0.0683 (0.0423)	0.5375 (0.1049)
OTOLARYNGOLOGY	66	0.0950 (0.0721)	0.0273 (0.0362)	0.1465 (0.0807)	0.0184 (0.0148)	0.0550 (0.0393)	0.5498 (0.1155)
PEDIATRICS	186	0.1001 (0.0764)	0.0461 (0.0414)	0.1598 (0.0796)	0.0236 (0.0189)	0.0225 (0.0209)	0.5398 (0.1111)
PSYCHIATRY	262	0.0925 (0.0663)	0.0047 (0.0129)	0.0639 (0.0966)	0.0255 (0.0215)	0.0175 (0.0204)	0.6881 (0.1208)
UROLOGY	66	0.0708 (0.0459)	0.0256 (0.0240)	0.1171 (0.0751)	0.0202 (0.0122)	0.0462 (0.0246)	0.6122 (0.0997)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
SAMPLE HAS ALL CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION PROBABILITIES

TABLE II - 12

MEDICARE ECONOMIC INDEX WEIGHTS
FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	1482	0.0855 (0.0616)	0.0363 (0.0373)	0.1558 (0.0853)	0.0235 (0.0187)	0.0383 (0.0364)	0.5525 (0.1182)
GENERAL PRACTICE	568	0.0879 (0.0714)	0.0478 (0.0411)	0.1767 (0.0940)	0.0275 (0.0222)	0.0297 (0.0280)	0.5224 (0.1249)
INTERNAL MEDICINE	407	0.0899 (0.0564)	0.0349 (0.0368)	0.1555 (0.0750)	0.0224 (0.0167)	0.0265 (0.0251)	0.5629 (0.1070)
SURGERY SPECLTIES	506	0.0793 (0.0526)	0.0245 (0.0283)	0.1326 (0.0764)	0.0200 (0.0148)	0.0576 (0.0440)	0.5780 (0.1116)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II - 13

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2625	0.0903 (0.0609)	0.0348 (0.0375)	0.1566 (0.0914)	0.0248 (0.0188)	0.0413 (0.0405)	0.5443 (0.1233)
ALLERGY	17	0.1014 (0.0685)	0.0565 (0.0449)	0.1989 (0.0902)	0.0196 (0.0132)	0.0232 (0.0240)	0.4924 (0.1176)
CARDIOVASCULAR	51	0.0917 (0.0547)	0.0247 (0.0213)	0.1589 (0.0752)	0.0224 (0.0140)	0.0293 (0.0168)	0.5650 (0.1051)
DERMATOLOGY	70	0.1019 (0.0503)	0.0358 (0.0404)	0.1667 (0.0733)	0.0188 (0.0126)	0.0267 (0.0231)	0.5421 (0.0968)
GASTROENTEROLOGY	20	0.0861 (0.0652)	0.0278 (0.0231)	0.1426 (0.0776)	0.0199 (0.0143)	0.0273 (0.0240)	0.5883 (0.1144)
GENERAL PRACTICE	741	0.0902 (0.0713)	0.0495 (0.0418)	0.1880 (0.0971)	0.0283 (0.0222)	0.0314 (0.0289)	0.5046 (0.1236)
GENERAL SURGERY	256	0.0805 (0.0583)	0.0223 (0.0252)	0.1219 (0.0705)	0.0241 (0.0175)	0.0716 (0.0522)	0.5716 (0.1142)
INTERNAL MEDICINE	377	0.0937 (0.0580)	0.0396 (0.0416)	0.1673 (0.0795)	0.0253 (0.0179)	0.0281 (0.0290)	0.5381 (0.1116)
NEUROLOGY SURGERY	29	0.0698 (0.0382)	0.0078 (0.0134)	0.1250 (0.0590)	0.0191 (0.0130)	0.0817 (0.0587)	0.5886 (0.0938)
OB-GYN	248	0.0817 (0.0474)	0.0259 (0.0229)	0.1562 (0.0702)	0.0225 (0.0163)	0.0761 (0.0527)	0.5295 (0.1050)
OPTHAMOLOGY	142	0.0967 (0.0494)	0.0309 (0.0381)	0.1685 (0.0925)	0.0231 (0.0158)	0.0431 (0.0336)	0.5297 (0.1250)
ORTHOPED SURGERY	112	0.0861 (0.0526)	0.0316 (0.0256)	0.1685 (0.0878)	0.0156 (0.0097)	0.0718 (0.0445)	0.5185 (0.1062)
OTOLARYNGOLOGY	63	0.0937 (0.0552)	0.0275 (0.0387)	0.1532 (0.0810)	0.0191 (0.0137)	0.0588 (0.0403)	0.5397 (0.1018)
PEDIATRICS	188	0.0985 (0.0601)	0.0489 (0.0385)	0.1670 (0.0744)	0.0247 (0.0168)	0.0249 (0.0226)	0.5280 (0.1042)
PSYCHIATRY	244	0.0984 (0.0647)	0.0050 (0.0133)	0.0680 (0.0950)	0.0273 (0.0217)	0.0186 (0.0203)	0.6746 (0.1172)
UROLOGY	67	0.0719 (0.0409)	0.0298 (0.0272)	0.1290 (0.0602)	0.0221 (0.0125)	0.0547 (0.0328)	0.5846 (0.0861)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS EXCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II - 14

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2462	0.0859 (0.0604)	0.0329 (0.0358)	0.1456 (0.0878)	0.0234 (0.0185)	0.0380 (0.0378)	0.5664 (0.1228)
ALLERGY	15	0.0965 (0.0669)	0.0524 (0.0437)	0.1810 (0.0873)	0.0193 (0.0126)	0.0231 (0.0240)	0.5198 (0.1232)
CARDIOVASCULAR	49	0.0850 (0.0546)	0.0227 (0.0205)	0.1422 (0.0707)	0.0200 (0.0126)	0.0267 (0.0165)	0.5954 (0.1074)
DERMATOLOGY	70	0.0959 (0.0498)	0.0338 (0.0394)	0.1556 (0.0709)	0.0174 (0.0115)	0.0251 (0.0225)	0.5642 (0.0998)
GASTROENTEROLOGY	19	0.0827 (0.0653)	0.0260 (0.0226)	0.1295 (0.0724)	0.0189 (0.0140)	0.0257 (0.0236)	0.6093 (0.1137)
GENERAL PRACTICE	700	0.0879 (0.0714)	0.0478 (0.0411)	0.1767 (0.0939)	0.0275 (0.0222)	0.0297 (0.0280)	0.5224 (0.1248)
GENERAL SURGERY	240	0.0768 (0.0578)	0.0211 (0.0235)	0.1136 (0.0685)	0.0227 (0.0170)	0.0660 (0.0501)	0.5918 (0.1128)
INTERNAL MEDICINE	349	0.0895 (0.0571)	0.0365 (0.0379)	0.1576 (0.0757)	0.0240 (0.0181)	0.0269 (0.0268)	0.5575 (0.1061)
NEUROLOGY SURGERY	28	0.0623 (0.0356)	0.0072 (0.0128)	0.1160 (0.0563)	0.0177 (0.0128)	0.0700 (0.0505)	0.6189 (0.0941)
OB-GYN	228	0.0758 (0.0473)	0.0241 (0.0217)	0.1410 (0.0674)	0.0204 (0.0154)	0.0688 (0.0502)	0.5619 (0.1089)
OPTHAMOLOGY	131	0.0899 (0.0502)	0.0304 (0.0375)	0.1551 (0.0842)	0.0213 (0.0153)	0.0375 (0.0310)	0.5578 (0.1234)
ORTHOPED SURGERY	103	0.0805 (0.0508)	0.0277 (0.0224)	0.1545 (0.0820)	0.0144 (0.0091)	0.0679 (0.0430)	0.5470 (0.1028)
OTOLARYNGOLOGY	59	0.0862 (0.0541)	0.0254 (0.0355)	0.1442 (0.0788)	0.0175 (0.0133)	0.0548 (0.0399)	0.5638 (0.0999)
PEDIATRICS	175	0.0953 (0.0601)	0.0463 (0.0355)	0.1574 (0.0720)	0.0232 (0.0162)	0.0224 (0.0205)	0.5474 (0.1023)
PSYCHIATRY	235	0.0912 (0.0610)	0.0046 (0.0129)	0.0616 (0.0902)	0.0252 (0.0209)	0.0171 (0.0195)	0.6924 (0.1127)
UROLOGY	62	0.0657 (0.0383)	0.0266 (0.0245)	0.1184 (0.0609)	0.0199 (0.0118)	0.0471 (0.0252)	0.6143 (0.0907)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES

TABLE II - 15

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT C UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	2310	0.0852 (0.0617)	0.0347 (0.0383)	0.1503 (0.0879)	0.0245 (0.0197)	0.0385 (0.0371)	0.5589 (0.1189)
ALLERGY	8	0.0992 (0.0633)	0.0560 (0.0483)	0.1672 (0.0946)	0.0217 (0.0111)	0.0231 (0.0237)	0.5248 (0.1227)
CARDIOVASCULAR	80	0.0873 (0.0618)	0.0217 (0.0207)	0.1382 (0.0641)	0.0210 (0.0128)	0.0266 (0.0163)	0.5972 (0.1004)
DERMATOLOGY	60	0.0914 (0.0456)	0.0354 (0.0408)	0.1527 (0.0682)	0.0172 (0.0116)	0.0266 (0.0205)	0.5688 (0.1016)
GASTROENTEROLOGY	22	0.0773 (0.0398)	0.0223 (0.0169)	0.1354 (0.0722)	0.0161 (0.0103)	0.0252 (0.0229)	0.6156 (0.1013)
GENERAL PRACTICE	736	0.0862 (0.0743)	0.0491 (0.0451)	0.1736 (0.1002)	0.0301 (0.0243)	0.0329 (0.0318)	0.5202 (0.1243)
GENERAL SURGERY	277	0.0731 (0.0557)	0.0191 (0.0221)	0.1108 (0.0732)	0.0228 (0.0162)	0.0666 (0.0537)	0.5997 (0.1145)
INTERNAL MEDICINE	540	0.0933 (0.0589)	0.0364 (0.0387)	0.1555 (0.0767)	0.0246 (0.0193)	0.0265 (0.0266)	0.5557 (0.1072)
NEUROLOGY SURGERY	26	0.0596 (0.0313)	0.0069 (0.0112)	0.1180 (0.0567)	0.0183 (0.0120)	0.0638 (0.0419)	0.6255 (0.0847)
OB-GYN	69	0.0817 (0.0529)	0.0214 (0.0195)	0.1508 (0.0764)	0.0178 (0.0118)	0.0767 (0.0561)	0.5436 (0.1163)
OPTHAMOLOGY	197	0.0893 (0.0495)	0.0275 (0.0349)	0.1539 (0.0921)	0.0199 (0.0136)	0.0378 (0.0284)	0.5635 (0.1238)
ORTHOPED SURGERY	90	0.0749 (0.0419)	0.0324 (0.0244)	0.1516 (0.0701)	0.0140 (0.0116)	0.0583 (0.0295)	0.5608 (0.0915)
OTOLARYNGOLOGY	45	0.0842 (0.0476)	0.0262 (0.0279)	0.1466 (0.0741)	0.0218 (0.0159)	0.0514 (0.0379)	0.5618 (0.0883)
PEDIATRICS	9	0.1032 (0.0693)	0.0453 (0.0503)	0.1339 (0.0939)	0.0223 (0.0082)	0.0136 (0.0087)	0.5737 (0.1532)
PSYCHIATRY	60	0.0913 (0.0652)	0.0056 (0.0165)	0.0795 (0.0948)	0.0290 (0.0223)	0.0195 (0.0269)	0.6671 (0.1152)
UROLOGY	92	0.0670 (0.0374)	0.0257 (0.0238)	0.1110 (0.0553)	0.0191 (0.0115)	0.0461 (0.0262)	0.6231 (0.0829)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES AND MEDICARE PARTICIPATION

TABLE II - 16

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	1678	0.0952 (0.0641)	0.0346 (0.0385)	0.1461 (0.0957)	0.0253 (0.0202)	0.0366 (0.0384)	0.5543 (0.1300)
ALLERGY	12	0.0922 (0.0498)	0.0571 (0.0486)	0.1883 (0.0991)	0.0205 (0.0136)	0.0237 (0.0225)	0.5101 (0.1254)
CARDIOVASCULAR	32	0.0950 (0.0603)	0.0195 (0.0200)	0.1499 (0.0805)	0.0218 (0.0148)	0.0277 (0.0184)	0.5781 (0.1168)
DERMATOLOGY	58	0.0979 (0.0504)	0.0333 (0.0377)	0.1466 (0.0635)	0.0175 (0.0116)	0.0260 (0.0241)	0.5706 (0.0949)
GASTROENTEROLOGY	9	0.1114 (0.0779)	0.0310 (0.0253)	0.1416 (0.0841)	0.0212 (0.0167)	0.0229 (0.0151)	0.5638 (0.1238)
GENERAL PRACTICE	527	0.0954 (0.0747)	0.0500 (0.0438)	0.1788 (0.0989)	0.0292 (0.0238)	0.0301 (0.0297)	0.5086 (0.1248)
GENERAL SURGERY	153	0.0878 (0.0618)	0.0230 (0.0261)	0.1190 (0.0750)	0.0237 (0.0180)	0.0712 (0.0546)	0.5673 (0.1176)
INTERNAL MEDICINE	248	0.0991 (0.0626)	0.0378 (0.0375)	0.1548 (0.0798)	0.0262 (0.0196)	0.0278 (0.0288)	0.5464 (0.1100)
NEUROLOGY SURGERY	14	0.0717 (0.0397)	0.0067 (0.0134)	0.1272 (0.0636)	0.0185 (0.0160)	0.0794 (0.0502)	0.5886 (0.1018)
OB-GYN	106	0.0871 (0.0514)	0.0254 (0.0227)	0.1508 (0.0792)	0.0224 (0.0183)	0.0770 (0.0524)	0.5294 (0.1177)
OPTHAMOLOGY	95	0.0957 (0.0491)	0.0298 (0.0344)	0.1644 (0.0943)	0.0222 (0.0139)	0.0337 (0.0257)	0.5463 (0.1245)
ORTHOPED SURGERY	40	0.0993 (0.0530)	0.0271 (0.0285)	0.1651 (0.0995)	0.0144 (0.0109)	0.0721 (0.0512)	0.5140 (0.1086)
OTOLARYNGOLOGY	39	0.1001 (0.0599)	0.0318 (0.0418)	0.1453 (0.0901)	0.0190 (0.0155)	0.0561 (0.0398)	0.5396 (0.1040)
PEDIATRICS	103	0.1084 (0.0632)	0.0529 (0.0407)	0.1580 (0.0776)	0.0255 (0.0187)	0.0234 (0.0225)	0.5238 (0.1086)
PSYCHIATRY	213	0.0940 (0.0617)	0.0049 (0.0135)	0.0561 (0.0892)	0.0257 (0.0203)	0.0168 (0.0196)	0.6945 (0.1143)
UROLOGY	29	0.0779 (0.0359)	0.0286 (0.0254)	0.1313 (0.0659)	0.0223 (0.0140)	0.0446 (0.0231)	0.5873 (0.0990)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES
SAMPLE INCLUDES SOLO PRACTITIONERS ONLY

TABLE II - 17

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	435	0.0706 (0.0463)	0.0285 (0.0303)	0.1457 (0.0653)	0.0200 (0.0138)	0.0442 (0.0406)	0.5830 (0.1014)
ALLERGY	2	0.0720 (0.0623)	0.0437 (0.0394)	0.1537 (0.0421)	0.0140 (0.0125)	0.0188 (0.0107)	0.5898 (0.1028)
CARDIOVASCULAR	8	0.0802 (0.0419)	0.0249 (0.0146)	0.1138 (0.0334)	0.0176 (0.0052)	0.0245 (0.0132)	0.6310 (0.0733)
DERMATOLOGY	7	0.0726 (0.0445)	0.0180 (0.0113)	0.1747 (0.0583)	0.0174 (0.0114)	0.0226 (0.0110)	0.5866 (0.0584)
GASTROENTEROLOGY	3	0.0415 (0.0293)	0.0121 (0.0121)	0.1006 (0.0595)	0.0215 (0.0133)	0.0381 (0.0438)	0.6783 (0.0820)
GENERAL PRACTICE	87	0.0724 (0.0552)	0.0381 (0.0293)	0.1690 (0.0668)	0.0231 (0.0125)	0.0290 (0.0251)	0.5604 (0.1068)
GENERAL SURGERY	41	0.0646 (0.0527)	0.0168 (0.0165)	0.1051 (0.0604)	0.0221 (0.0153)	0.0646 (0.0476)	0.6187 (0.1024)
INTERNAL MEDICINE	54	0.0727 (0.0287)	0.0337 (0.0475)	0.1687 (0.0622)	0.0192 (0.0113)	0.0267 (0.0213)	0.5711 (0.0921)
NEUROLOGY SURGERY	7	0.0439 (0.0158)	0.0053 (0.0127)	0.0898 (0.0225)	0.0182 (0.0096)	0.0622 (0.0625)	0.6725 (0.0675)
OB-GYN	78	0.0652 (0.0378)	0.0234 (0.0241)	0.1368 (0.0557)	0.0191 (0.0133)	0.0649 (0.0527)	0.5826 (0.0992)
OPTHAMOLOGY	17	0.1025 (0.0580)	0.0455 (0.0549)	0.1328 (0.0480)	0.0228 (0.0248)	0.0653 (0.0503)	0.5231 (0.1318)
ORTHOPED SURGERY	39	0.0759 (0.0461)	0.0279 (0.0203)	0.1553 (0.0746)	0.0141 (0.0087)	0.0665 (0.0354)	0.5524 (0.1018)
OTOLARYNGOLOGY	12	0.0537 (0.0199)	0.0128 (0.0079)	0.1383 (0.0436)	0.0136 (0.0080)	0.0600 (0.0473)	0.6136 (0.0671)
PEDIATRICS	46	0.0808 (0.0549)	0.0357 (0.0226)	0.1608 (0.0640)	0.0214 (0.0115)	0.0198 (0.0164)	0.5735 (0.0808)
PSYCHIATRY	14	0.0695 (0.0497)	0.0013 (0.0039)	0.1072 (0.0799)	0.0241 (0.0313)	0.0181 (0.0111)	0.6717 (0.0990)
UROLOGY	19	0.0500 (0.0306)	0.0310 (0.0278)	0.1186 (0.0544)	0.0175 (0.0094)	0.0506 (0.0237)	0.6243 (0.0856)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES
SAMPLE INCLUDES GROUPS WITH EQUAL INCOME AND FROM SAME SPECIALTY

TABLE II - 18

MEDICARE ECONOMIC INDEX WEIGHTS FOR PHYSICIAN COST CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES)

SPECIALTY	N	RENT & UTILITY	SUPPLY	NON-MD SALARY	AUTO	MALPR INSUR	MD NET INCOME
OVERALL	333	0.0599 (0.0440)	0.0301 (0.0277)	0.1424 (0.0714)	0.0181 (0.0126)	0.0365 (0.0295)	0.6051 (0.0999)
ALLERGY	2	0.1368 (0.1609)	0.0342 (0.0192)	0.1629 (0.0431)	0.0169 (0.0110)	0.0228 (0.0487)	0.5183 (0.1745)
CARDIOVASCULAR	9	0.0518 (0.0232)	0.0330 (0.0256)	0.1403 (0.0525)	0.0155 (0.0052)	0.0252 (0.0121)	0.6262 (0.0895)
DERMATOLOGY	5	0.1059 (0.0502)	0.0647 (0.0726)	0.2406 (0.1249)	0.0164 (0.0127)	0.0174 (0.0125)	0.4469 (0.1513)
GASTROENTEROLOGY	6	0.0636 (0.0487)	0.0268 (0.0240)	0.1290 (0.0689)	0.0133 (0.0094)	0.0203 (0.0199)	0.6390 (0.0936)
GENERAL PRACTICE	85	0.0585 (0.0532)	0.0440 (0.0322)	0.1733 (0.0860)	0.0205 (0.0163)	0.0282 (0.0183)	0.5675 (0.1254)
GENERAL SURGERY	43	0.0535 (0.0341)	0.0189 (0.0196)	0.1038 (0.0503)	0.0189 (0.0143)	0.0488 (0.0296)	0.6480 (0.0760)
INTERNAL MEDICINE	46	0.0578 (0.0302)	0.0317 (0.0254)	0.1570 (0.0672)	0.0182 (0.0131)	0.0230 (0.0206)	0.6042 (0.0860)
NEUROLOGY SURGERY	6	0.0617 (0.0383)	0.0107 (0.0129)	0.1202 (0.0633)	0.0152 (0.0082)	0.0571 (0.0383)	0.6271 (0.0828)
OB-GYN	41	0.0653 (0.0470)	0.0228 (0.0140)	0.1252 (0.0511)	0.0177 (0.0097)	0.0545 (0.0355)	0.6065 (0.0778)
OPTHAMOLOGY	19	0.0497 (0.0232)	0.0203 (0.0315)	0.1285 (0.0306)	0.0154 (0.0100)	0.0317 (0.0206)	0.6463 (0.0591)
ORTHOPED SURGERY	18	0.0547 (0.0499)	0.0267 (0.0141)	0.1227 (0.0566)	0.0158 (0.0062)	0.0682 (0.0456)	0.6038 (0.0755)
OTOLARYNGOLOGY	8	0.0667 (0.0281)	0.0128 (0.0128)	0.1481 (0.0660)	0.0164 (0.0050)	0.0398 (0.0260)	0.6082 (0.0847)
PEDIATRICS	26	0.0691 (0.0399)	0.0392 (0.0255)	0.1489 (0.0634)	0.0174 (0.0101)	0.0231 (0.0184)	0.5944 (0.0842)
PSYCHIATRY	7	0.0464 (0.0358)	0.0033 (0.0043)	0.1273 (0.0772)	0.0109 (0.0121)	0.0249 (0.0288)	0.6793 (0.0792)
UROLOGY	13	0.0613 (0.0463)	0.0153 (0.0118)	0.0893 (0.0515)	0.0184 (0.0088)	0.0477 (0.0324)	0.6600 (0.0547)

COSTS SHARES ARE FOR THE FIRM WHERE COSTS INCLUDE PENSION WITH 1975 OVERHEAD SHARE (.108)
EDITED CASES FROM THE 1977 PHYSICIANS PRACTICE COST SURVEY WITH COMPLETE COST DATA
SAMPLE IS WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES
SAMPLE INCLUDES GROUPS WITH UNEQUAL INCOMES AND FROM DIFFERENT SPECIALTIES

TABLE II-19
HOTELLING TESTS FOR DIFFERENCES IN DEFINITION OF SAMPLE AND COST SHARES

I. A TEST TO DETERMINE WHETHER A SIGNIFICANT DIFFERENCE EXISTS BETWEEN COST SHARES OF CASES WHICH WERE INCLUDED AND THOSE WHICH WERE EDITED FROM THE SAMPLE USED IN ANALYSIS. (CASES CULLED DUE TO THE SIZE OF VALUES FOR SELECTED VARIABLES.)

	COST SHARE MEANS (STD. ERROR IN PAREN.)		T-STATISTIC	PROB.
	INCLUDED	EXCLUDED		
1. RENT AND UTILITIES	.0830 (.0012)	.1220 (.0087)	-4.45	0.000
2. SUPPLIES	.0312 (.0007)	.0584 (.0057)	-4.71	0.000
3. EMPLOYEE SALARIES	.1521 (.0017)	.1665 (.0078)	-2.44	0.015
4. MALPRACTICE PREMIUMS	.0383 (.0008)	.0300 (.0023)	3.38	0.001
5. NET INCOME (INC. PENSION	.5650 (.0025)	.4959 (.0116)	5.92	0.000
OVERALL T (HOTELLING)			163.36	0.000

II TEST TO DETERMINE WHETHER A SIGNIFICANT DIFFERENCE EXISTS BETWEEN THE COST SHARES DEFINED ON A PER-PHYSICIAN BASIS AND THOSE DEFINED ON A FIRM-WIDE BASIS.

	DIFFERENCE IN MEANS (STD. ERROR IN PAREN.)	T-STATISTIC	PROB.
1. RENT AND UTILITIES	.0005 (.0001)	9.21	0.000
2. SUPPLIES	.0002 (.0000)	7.62	0.000
3. EMPLOYEE SALARIES	.0012 (.0001)	8.45	0.000
4. MALPRACTICE PREMIUMS	.0002	7.77	0.000
5. NET INCOME (INC. PENSION)	-.0023 (.0002)	-9.53	0.000
OVERALL T (HOTELLING)		97.96	0.000

SECTION III

MULTIVARIATE ANALYSIS OF COST SHARES

Multivariate analysis of variance (abbreviated MANOVA) allows the testing of the effect of one or more factors such as specialty or region on several dependent variables such as several cost shares. In the standard one-way analysis of variance, the researcher tests the influence of one factor with two or more levels or categories on one dependent variable; an example would be a test of the influence of specialty on one of the several cost shares with each of the several specialties entering as different categories. In fact, during preliminary analysis of the data, such ANOVAs were performed on each cost share separately, and strongly significant differences appeared for all cost shares across specialties (all F-statistics were significant at the .001 level). MANOVA with one factor resembles several one-way analyses of variance but performed simultaneously.

MANOVA tests whether a factor has a significant impact on all dependent variables taken together, in this case the cost shares. Not all cost shares are included because the cost shares by definition are constrained to equal one: it is sufficient to test whether the differences appear across all cost shares except one and the test results are independent of which is omitted. More formally, MANOVA tests whether the 6 cost shares are simultaneously equal across all specialties; the hypothesis is of equal specialty effect vectors.

The results of the MANOVA tests appear in Tables III-1 to III-9. As indicated in the preceding Section, collapsing the number of specialties from 15 to 3 would allow easier implementation of specialty specific Medicare Economic Indices because in both surgery and internal medicine, physicians frequently mix general and specialized practice work: determining the exact specialty content of the work is difficult. Therefore, the first test determined whether homogeneity existed across these specialties. The results from Table III-1 do not suggest much homogeneity even within internal medicine specialties or surgical specialties. The cost shares for surgical specialties do not appear to differ significantly across different population categories. Note again that the dependent variables in this analysis are the five cost shares of rent, supplies, employee salaries, malpractice insurance, and net income; the cost share breakdown follows Table II-12 above which is based on firm-wide costs with net income including pensions and overhead imputed at the 1975 level.

Even though the results in Table III-1 reveal that specialties should not be aggregated, computational cost prevented specifying a complete MANOVA includng all possible interactions unless the three-way specialty aggregation (SPEC3) was used. This aggregation omits three specialties whose percent of patient practice receiving Medicare Part B is significantly lower: pediatrics, psychiatry, and obstetrics/gynecology.

In addition to the aggregated specialty variable, the MANOVA included as independent variables the region, populaton size, and practice type categorical variables. As discussed in Section II, the specialty and region variables were included because the prevailing charge rates currently vary across those dimensions. The population size category acts as a partial proxy for the influences of varying prices; the region variable might also play this role.

Table III-2 presents a MANOVA model with full interactions for the specialty, population and region variables. The cost shares in this Table are defined on a firm-wide basis while the cost shares in the following Table are defined on a per-physician basis; otherwise there are no differences in the models. In both Tables, the main effects are strongly significant with probability levels near .0001 but only the population and region interaction approaches that significance level. The interaction between specialty and region is significant at a much lower level of confidence. Comparing the two Tables, note that the values for the Wilk's criterion are quite close for each main and interaction effect. Therefore, use of either the firm-wide or the per-physician cost share definitions is acceptable and use of one rather than the other will not change the statistical results from the MANOVA model. This conclusion is welcome because the results from the Hotelling test indicated that these cost share definitions are significantly different from each other.

Tables III-4 and III-5 examine two sub-populations: solos in Table III-4 and groups in III-5. The model in Table III-4 tests the effect of expense sharing by solo practitioners. The Survey asked solos if they shared space, equipment or employees. Table III-4 shows somewhat surprisingly that sharing of resources generally does not significantly affect the distribution of cost shares at probability levels below the conventional 5 percent level although the sharing of employee labor has an effect near 5 percent.

In Table III-5, the model tests the effect of three practice organization characteristics on the cost share distribution of groups. Two variables test the impact of homogeneity within the group. The variable SAMESPEC distinguishes between groups where all physicians belong to the same specialty and those with different specialists while the variable EQUALINC separates groups where each physician receives the same net income and those where income is not equal. Neither of these effects is significant, a result which supports the use of the firm-wide cost shares. Note that the type of practice (incorporated group or partnership) does influence the cost share distribution very likely because of the greater pension deduction possible with incorporation. The solo and group effects could have been tested in the same model through nesting these effects.

Table III-6 draws on the results from Table III-2 through III-5. It presents a model which includes only those effects which were significant near the .001 level in these other Tables. The main effects of specialty, population, and region are included along with the interaction between region and population. Also included are the effects of incorporation and group practice which are, as expected, strongly significant.

Tables III-7 and III-8 extend the MANOVA model to include a measure of output, patient office visits, and the extent of participation in Medicare (III-7) and Medicaid (III-8). Increases in the number of office visits do affect the cost distribution significantly, suggesting that economies of scale exist in these smaller practices. The extent of participation in Medicare or Medicaid does not affect the cost distribution at conventional confidence levels.

TABLE III-1

MULTIVARIATE ANALYSIS OF VARIANCE RESULTS TO TEST FOR HOMOGENEITY WITHIN SPECIALTY GROUPINGS (ENTRIES ARE THE F-STATISTICS FOR WILK'S CRITERION)

SPECIALTY GROUPINGS	EFFECTS	F-STATISTIC	PROBABILITY
1. INTERNAL MEDICINE AND SPECIALTIES (NUMBERS 1, 2, 3, 4) N=272	SPECALL	3.51	0.0001
	BLSPOP	1.46	0.0865
	REGION	1.75	0.0663
2. INTERNAL MEDICINE SPECIALTIES (NUMBERS 1, 2, 3, 4, 7) N=558	SPECALL	3.08	0.0001
	BLSPOP	2.34	0.0007
	REGION	3.31	0.0003
3. SURGICAL SPECIALITIES - OFFICE BASED (NUMBERS 12, 14, 17) N=270	SPECALL	4.69	0.0001
	BLSPOP	0.78	0.7377
	REGION	2.31	0.0117
4. SURGICAL SPECIALTIES - HOSPITAL BASED (NUMBERS 8, 13) N=142	SPECALL	10.68	0.0001
	BLSPOP	0.90	0.5853
	REGION	1.07	0.3874
5. SURGICAL SPECIALTIES (NUMBERS 8, 12, 13, 14, 17) N=412	SPECALL	6.04	0.0001
	BLSPOP	0.91	0.5781
	REGION	1.93	0.0380
6. SURGERY AND SURGICAL SPECIALTIES (NUMBERS 6, 8, 12, 13, 14, 17) N=686	SPECALL	6.48	0.0001
	BLSFOP	1.84	0.0129
	REGION	5.37	0.0001

SPECALL: TWELVE SPECIALTY CATEGORIES
1. ALLERGY
2. CARDIOVASCULAR DISEASE
3. DERMATOLOGY
4. GASTROENTEROLOGY
5. GENERAL PRACTICE
6. GENERAL SURGERY
7. INTERNAL MEDICINE
8. NEUROLOGICAL SURGERY
12. OPHTHALMOLOGY
13. ORTHOPEDIC SURGERY
14. OTOLARYNGOLOGY
17. UROLOGY

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE III-2

THE EFFECT OF SPECIALTY, REGION, AND POPULATION SIZE CATEGORIES ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=1646)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	34.72	0.0001
BLSPOP	3.65	0.0001
REGION	6.01	0.0001
INTERACTIONS		
SPEC3*BLSPOP	0.98	0.5055
SPEC3*REGION	1.64	0.0361
BLSPOP*REGION	1.74	0.0043
SPEC3*BLSPOP*REGION	1.01	0.4507

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE III-3

THE EFFECT OF SPECIALTY, REGION, AND POPULATION SIZE CATEGORIES ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A PER-PHYSICIAN BASIS)
(N=1763)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	40.87	0.0001
BLSPOP	3.71	0.0001
REGION	6.76	0.0001
INTERACTIONS		
SPEC3*BLSPOP	0.96	0.5468
SPEC3*REGION	1.84	0.0127
BLSPOP*REGION	2.02	0.0004
SPEC3*BLSPOP*REGION	1.02	0.4265

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
   (NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE III-4

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND SOLO PRACTICE CHARACTERISTICS ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=1099)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	26.27	0.0001
BLSPOP	3.63	0.0001
REGION	5.75	0.0001
INCORP	5.40	0.0001
SHRSPAC	0.92	0.4668
SHREQUP	0.15	0.9784
SHRLABR	1.73	0.0693

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

SHRSPAC: SOLO SHARES SPACE COST/DOES NOT SHARE
1. SHARES
2. DOES NOT SHARE

SHREQUP: SOLO SHARES EQUIPMENT COST/DOES NOT SHARE
1. SHARES
2. DOES NOT SHARE

SHRLABR: SOLO SHARES LABOR COST/DOES NOT SHARE
1. SHARES ALL
2. SHARES SOME
3. SHARES NONE

TABLE III-5

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND GROUP PRACTICE CHARACTERISTICS ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=525)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	17.83	0.0001
BLSPOP	1.54	0.0593
REGION	3.15	0.0006
INCORP	4.00	0.0015
SAMESPEC	1.74	0.1226
EQUALINC	0.57	0.7238
PRACTYPE	3.61	0.0034

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

SAMESPEC: ALL PHYSICIANS IN GROUP SAME SPECIALTY/DIFFERENT SPECIALTY
1. SAME SPECIALTY
2. DIFFERENT SPECIALTIES

EQUALINC: ALL PHYSICIANS IN GROUP RECEIVE EQUAL INCOME/UNEQUAL INCOME
1. EQUAL INCOME
2. UNEQUAL INCOME

PRACTYPE: GROUP IS PARTNERSHIP/NOT PARTNERSHIP
1. PARTNERSHIP
2. GROUP

TABLE III-6

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND OTHER PRACTICE CHARACTERISTICS ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=1636)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	43.24	0.0001
BLSPOP	3.82	0.0001
REGION	8.58	0.0001
INCORP	8.22	0.0001
GROUP	18.08	0.0001
INTERACTION		
BLSPOP*REGION	1.66	0.0016

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

GROUP: FIRM IS SOLO/FIRM IS GROUP
1. SOLO
2. GROUP

TABLE III-7

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND OTHER PRACTICE CHARACTERISTICS INCLUDING MEDICARE SHARE IN TOTAL CASE LOAD ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=1514)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	36.56	0.0001
BLSPOP	3.87	0.0001
REGION	6.66	0.0001
INCORP	5.48	0.0001
GROUP	16.46	0.0001
PATVIS	27.66	0.0001
MEDICARE	1.98	0.0776
INTERACTIONS		
BLSPOP*REGION	1.38	0.0332

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

GROUP: FIRM IS SOLO/FIRM IS GROUP
1. SOLO
2. GROUP

PATVIS: PATIENT OFFICE VISITS
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE

TABLE III-8

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND OTHER PRACTICE CHARACTERISTICS INCLUDING MEDICAID SHARE IN TOTAL CASE LOAD ON COST SHARE DISTRIBUTION

(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=1575)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPEC3	38.26	0.0001
BLSPOP	3.76	0.0001
REGION	7.41	0.0001
INCORP	6.86	0.0001
GROUP	17.64	0.0001
PATVIS	29.34	0.0001
MEDICAID	0.77	0.5704
INTERACTIONS		
BLSPOP*REGION	1.54	0.0067

SPEC3: THREE SPECIALTY CATEGORIES
1. GENERAL PRACTICE
2. INTERNAL MEDICINE AND SPECIALTIES
3. SURGERY AND SURGERY SPECIALTIES
(NO PEDIATRICIANS, OBSTETRICIANS, OR PSYCHIATRISTS INCLUDED)

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

GROUP: FIRM IS SOLO/FIRM IS GROUP
1. SOLO
2. GROUP

PATVIS: PATIENT OFFICE VISITS
MEDICAID: PERCENT OF PATIENTS WHO RECEIVE MEDICAID

TABLE III-9

THE EFFECT OF SPECIALTY, REGION, POPULATION SIZE CATEGORIES AND OTHER PRACTICE CHARACTERISTICS INCLUDING MEDICARE SHARE IN TOTAL CASE LOAD ON COST SHARE DISTRIBUTION

(NOTE SPECIALTY CATEGORIES ARE NOT GROUPED AS IN TABLES 2-8)
(COST SHARES ARE DEFINED ON A FIRM-WIDE BASIS)
(N=2051)
(VARIABLES ARE WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE AND MEDICARE PARTICIPATION)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPECALL	12.22	0.0001
BLSPOP	6.44	0.0001
REGION	9.54	0.0001
INCORP	9.18	0.0001
GROUP	19.39	0.0001
PATVIS	61.51	0.0001
MEDICARE	6.28	0.0001
INTERACTIONS		
BLSPOP*REGION	3.16	0.0001

SPECALL: TWELVE SPECIALTY CATEGORIES
1. ALLERGY
2. CARDIOVASCULAR DISEASE
3. DERMATOLOGY
4. GASTROENTEROLOGY
5. GENERAL PRACTICE
6. GENERAL SURGERY
7. INTERNAL MEDICINE
8. NEUROLOGICAL SURGERY
12. OPHTHALMOLOGY
13. ORTHOPEDIC SURGERY
14. OTOLARYNGOLOGY
17. UROLOGY

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

GROUP: FIRM IS SOLO/FIRM IS GROUP
1. SOLO
2. GROUP

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

PATVIS: PATIENT OFFICE VISITS
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE

SECTION IV

COST SHARE EQUATION ESTIMATION

The results from the previous Section show that the distribution of practice costs depends on some basic practice characteristics. These characteristics include the physician's specialty, the practice size, location, and type of organization. These results from Section III are based on statistics from multivariate analyses of variance. While these statistics indicate that practice characteristics do significantly affect the distribution of practice costs, the statistics do not identify which characteristics impact on which cost share. To identify these relationships requires other statistical techniques such as multiple comparison or regression analysis. This Section reports some results from the estimaton of regressions in which the cost shares are the dependent variables.

In Section III, the basic null hypothesis states that a given practice characteristic has no effect on the set of cost shares, given, the effect of all other characteristics. This is a composite hypothesis because the test of a given effect applies to all cost shares taken together not each share taken separately. While multivariate analysis of variance is designed to test such composite hypotheses, regression analysis can test either the composite or separate hypotheses. However, if the tests are properly constructed, the tests statistics for the regression analysis will replicate those for the multivariate analysis of variance if in both cases the sum of squares for the effect tested is due to adding that effect last in the model. Because the test results would be identical, it is pointless to calculate the statistics for the composite hypothesis in the regression model. Instead, the regression analysis focuses on tests of the marginal effect of each variable on each cost share. The regression model consists of five equations, each having a different cost share as the dependent variable. For this analysis, the set of cost shares chosen was the one based on firm-wide non-physician costs with the overhead proportion of cost set equal to 10.8 percent for all cases, and with net income including pensions. Because the overhead cost share equals 10.8 for all cases, no variation exists for this cost share and obviously no regression equation can be estimated. Of the remaining six cost share equations, only five can be estimated because the six cost shares are constrained to sum to .892 and one share is therefore determined computationally by the remaining five. This constraint on the cost shares also constrains the coefficients on the same independent variable in each of the five equations to sum to zero. Estimation of n-1 share equations determines the parameters of the remaining equation.

The set of independent variables in each of the five cost share equations is the same. The set includes the variables used in the multivariate analysis because again the purpose is to supplement that analysis by determining the partial effect of each of these variables on the cost shares. These variables include the physicians's specialty, the practice location, the practice size and organization, and the participation in the Medicare and Medicaid programs. Practice location is a proxy for area differences in input prices, particularly rent. Physician specialty partly controls for differences in patient problems and treatment. The effect of economies of scale may appear in the visit variables or the group/solo variable. The Medicare and Medicaid variables identify the impact of these programs on practice cost shares. The incorporation variable is a partial proxy for the combined effects of expected future net income (with higher income physicians preferring to leave funds in the corporation and pay the lower corporate rate), of physician retirement preference (with older physicians preferring the higher deductibility allowed under the corporate defined benefit pension plan), and of the presence of non-practice income (from rental or other investment sources).

These cost share equations are not derived from a cost function and therefore do not include the price variables which appear, for instance, in the estimation of the cost share equations for the translog cost function. Translog cost functions for each specialty were estimated and described in the Base Year Report, which relied on data from the 1976 Survey. The 1977 Survey only includes employee wages and no other prices. Their absence restricts estimation of cost function parameters. In general, omitting a variable will likely bias the estimated coefficients on the included variables and interpreting the coefficient on the employee wage (or imputed physician wage) variable is difficult because any bias will lead to biased estimates of elasticities of substitution. Because of data limitations, the estimated equations should not be viewed as even an approximation to a structural cost function but simply as behavioral functions.

Because the same set of variables appears in all five cost share equations, system estimation is not necessary. In this case, the errors in the equations are not dependent except that they sum to zero, a restriction again accounted for by the omission of one share equation in the estimation. The error terms may not be normally distributed due to the form and distribution of the dependent variables. Examination of the Kolmogorov-Smirnov statistic indicates that neither the cost shares nor a logit transformation are normally distributed; further work on this problem will appear in the reports for the second Option Year. Also, the Report will present tests of heteroskedasticity in the residuals and re-estimate the cost share equations with appropriate weights as necessary.

Table IV-1 through IV-10 present estimates of the cost share equation parameters. The first five of these Tables contain only the limited set of independent variables-physician specialty designation and practice location while the last five Tables expand this set to include the other practice characteristics. Table IV-1 indicates that a general practice located in a rural county (one not part of a SMSA) in the North central region spends 7.93 percent of total cost on rent and utilities. Being located in other regions does not change that cost share but locating in increasingly larger SMSAs will raise the percentage significantly. A general practice in the largest SMSA (BLSPOP5) spends about 10.2 percent on rent. Both surgeons and internists spend a smaller proportion but this difference is significant only for surgeons whose share is 6.8 percent, approximately 15 percent less than for general practitioners. Surgeons' greater activity at hospitals explains the direction of this difference. Table IV-2 indicates that the market for supplies is national. None of the regional or population coefficients is significant at less than the five percent confidence level. Again, general practitioners spend more on supplies than internists or surgeons. This result suggests that office surgery performed by surgeons is either infrequent or less expensive relative to general practitioners' overall supply expenses. In Table IV-3, the share of expenses for employee salaries appears to be affected primarily by the specialty type although surprisingly the smallest SMSAs show a larger share. The proportion spent on malpractice, as shown in Table IV-4, varies significantly across region and population categories with the highest share in the larger SMSAs in the Western region, probably California. In fact, a general practitioner allocates twice the share to malpractice in the largest SMSAs relative to the rural areas. The patterns for net income are not surprising. The share decreases with SMSAs of increasing size due to the increasing costs of other inputs. Surgeons and internists have net income shares of 59 and 58 percent respectively in the rural North-central area but in the urban West their share decreases.

Tables IV-6 through IV-10 add the other practice characteristics: the numbers of office patient visits and all outside visits, the participation in Medicare and Medicaid programs and the indicators of incorporation or group status. Generally the signs and significance level of the specialty and location variables remain the same although the size of the coefficients has changed. Of the added variables, the two describing patient visits show the highest significance levels.

An increase in patient visits decreases the share allocated to rent, malpractice, and net income but increases the share of supplies and employee salaries. These results suggest economies of scale do not arise in the use of employees or supplies but do arise in the more fixed expenditures of net income, rent, and malpractice premiums. The pattern of coefficients for other or outside visits reverses the pattern of office visits except in the rent equation. As expected, a rise in outside or non-office visits reduces the share expended on rent, supplies, and employee salaries, which are exclusively office cost variables. Interestingly, groups spend a much smaller share on rent than solos again suggesting economies of scale but receive a much higher share in net income. The extent of participation in the Medicare and Medicaid programs does not significantly affect the size of any of the individual cost shares.

These results suggest that the weights in the Medicare Economic Index are affected significantly by the specialty, the location, and the organization of the practice. Currently, only one Index number is calculated for the nation as a whole, and thus, only one set of weights is used in the construction of the Index. If the Index were respecified to include firm-specific cost shares and local prices and wages for the inputs, then firm-specific Indices could be constructed. Of course, the cost shares could also be specified more generally for each specialty or each region, leading to specialty-specific or regional-specific Indices.

Because the results above indicate that the cost shares vary significantly across both specialty and region, it is quite likely that Index values do also. If so, specialty or region-specific Indices could be used appropriately. In fact, use of such Indices would have a direct precedent because the Medicare Economic Index replaced the customary, prevailing, and reasonable charge system under which the prevailing charges were specialty and region specific. In order to determine whether region or specialty-specific Indices should be used, one should test whether the region and specialty categorical variables affect firm-specific Index values. This test is a necessary but not sufficient condition in deciding to replace the one national Index with more disaggregated Indices. To be sufficient, the test should determine whether Index values vary significantly at the firm level given these region and specialty effects, but to complete this test requires multiple observations per firm, which are unavailable in the Physician Practice Cost Survey.

Because local prices are not available, we were prevented from constructing firm-specific Index numbers. Instead, we formed firm-specific share Indices which are the sum of the products of firm-specific cost-shares and national prices. These Indices are an odd hybrid because cost shares would be unlikely to differ if prices were actually uniform throughout the nation, given that the technology of office-based medical care has diffused widely. However, that is an ex ante objection and we propose this hybrid Index as an ex post policy evaluation instrument which allows us to estimate the effect of specialty and regional differences on a firm-specific basis. These effects appear in Tables IV-11 to IV-13.

In Table IV-11, the dependent variable is an Index number which is the sum of the products of each observation's cost shares and the associated national price changes for the seven cost categories referred to above. These cost shares are formed using the firm-wide definition of total cost with equipment expenses as a proxy for overhead and without pensions included in net income. The prices are those the HCFA used in calculating the Medicare Economic Index for the current Fee Screen Year, 1982. For the seven cost categories, these price changes are (1)rent, 1.1569; (2)supplies, 1.0941; (3)employee wages, 1.0968; (4)malpractice premiums, 1.0526; (5)net income, 1.0786; (6)auto, 1.1747; and (7)equipment, 1.1346. Note that the intercept coefficient is the value of the Index for general practitioners in the rural north central region. Surprisingly, surgeons have a smaller Index value as indicated by the negative coefficient as do internists although the coefficient for internists is not significant at the 5 percent confidence level. Surgeons generally have lower cost shares in those categories which allowed greater price increases;

namely, rent, supplies, and auto expenses.

Regional differences are not significant except for the South which shows an index value 0.17 percent higher than the North central region. The pronounced area effect is the increase in the index value across SMSAs of increasing size. Relative to the rural counties, the counties in the largest SMSAs have an index value which is 0.17 percent higher. If, in addition, local prices were substituted for the single national price vector, and if employee wages and rent were at least 10 percent higher in the largest areas, this difference would be much greater, nearly 2 or 3 percent, as compared to the 0.17 shown above. Thus, for the SMSA variable, the differences in cost shares, though highly significant, may not matter as much as differences in local prices.

Given the coefficients in Table IV-11, it appears that specialty differences do lead to small though significant differences in index values. An alternative test of the total additional impact of specialty is to estimate the model without the specialty categorical variables and then perform an F-test. The model without specialty variables explained a small .017 percent of the variation and although the inclusion of these specialty variables only raises the r-square to .0517, the F-statistic for this effect is 30.44, which indicates that the specialty effect though small is highly significant, a result consistent with previous findings.

In Table IV-11, the index included equipment expenses as a proxy for overhead. If overhead expenses are imputed at 10.8 percent based on the 1975 Survey results and the model is re-estimated, then the signs and the significance of most of coefficients do not change except that the internal medicine specialty coefficient becomes significant at -0.1 percent. These results are not presented but in Table IV-12, we use this imputed overhead expense in the calculation of the index and include other practice organization characteristics, such as incorporation, group, the number of visits and the participation in Medicaid and Medicare programs. Group practices have lower index values which mean that if they face the same prices, their per unit costs are lower than solos, but the difference is small, 0.25 percent. The coefficient on other visits has apparently reduced the coefficient on surgeons which is understandable due to surgeons' extensive hospital work.

Finally Table IV-13 disaggregates the specialty variable from 2 to 14 with general practice still the specialty included in the intercept. Note that nearly all of the specialties have significant coefficients except for the two most general specialties, pediatrics and internal medicine. The signs of all the significant coefficients are negative which indicates that general practitioners have larger cost shares in those categories which received the largest price increases. The price increases allowed net income and malpractice premiums are the smallest and as a group surgeons have larger shares in these categories. Note that the significance of the population variable is reduced largely because of the concentration of specialties in the larger metropolitan areas.

TABLE IV-1

SHARE EQUATION FOR THE COST OF SPACE AND UTILITIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: SPACE
DEP VAR: RSPACXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.079328	0.004757228	16.6752	0.0001
SPECSURG	1	-0.011254	0.004325728	-2.6016	0.0094
SPECINT	1	-0.00266192	0.004589895	-0.5800	0.5620
WEST	1	0.004734374	0.00490165	0.9659	0.3343
NOEAST	1	0.004694316	0.004808798	0.9762	0.3291
SOUTH	1	0.010880	0.004579503	2.3758	0.0176
BLSPOP2	1	0.001120271	0.004772537	0.2347	0.8144
BLSPOP3	1	0.010457	0.006425868	1.6274	0.1039
BLSPOP4	1	0.011104	0.004843024	2.2928	0.0220
BLSPOP5	1	0.022418	0.006167327	3.6350	0.0003

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-2

SHARE EQUATION FOR THE COST OF SUPPLIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

```
MODEL:   SUPPLY
DEP VAR: RSUPLXTP
                        PARAMETER    STANDARD                  APPROX
VARIABLE          DF     ESTIMATE       ERROR       T RATIO    PROB>|T|

INTERCEPT          1     0.053748  0.003096103      17.3600      0.0001
SPECSURG           1    -0.025264  0.002815273      -8.9738      0.0001
SPECINT            1    -0.011283  0.002987199      -3.7772      0.0002
WEST               1  -0.00263123  0.003190095      -0.8248      0.4096
NOEAST             1  -0.00353989  0.003129665      -1.1311      0.2582
SOUTH              1   0.00575207  0.002980436       1.9299      0.0538
BLSPOP2            1  -0.00430663  0.003106066      -1.3865      0.1658
BLSPOP3            1  -0.00485405  0.004182088      -1.1607      0.2459
BLSPOP4            1  -0.00166166  0.003151941      -0.5272      0.5981
BLSPOP5            1  -0.00463015  0.004013824      -1.1535      0.2489
```

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-3

SHARE EQUATION FOR COST OF EMPLOYEE SALARIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

```
MODEL:   EMPSAL
DEP VAR: REMPSXTP
                          PARAMETER     STANDARD                    APPROX
VARIABLE           DF      ESTIMATE        ERROR       T RATIO    PROB>|T|

INTERCEPT           1      0.174110   0.00589544       29.5331      0.0001
SPECSURG            1     -0.036919  0.005360699       -6.8871      0.0001
SPECINT             1     -0.013659  0.005688071       -2.4014      0.0164
WEST                1     0.0049937  0.006074416        0.8221      0.4111
NOEAST              1     -0.032060  0.005959348       -5.3798      0.0001
SOUTH               1   0.004039407  0.005675193        0.7118      0.4767
BLSPOP2             1      0.012545  0.005914411        2.1210      0.0341
BLSPOP3             1   0.002419354  0.007963318        0.3038      0.7613
BLSPOP4             1   0.004723705  0.006001764        0.7871      0.4314
BLSPOP5             1     -0.010396  0.007642919       -1.3602      0.1740
BLSPOP5             1   -0.00913897  0.007609098       -1.2011      0.2299
```

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-4

SHARE EQUATION FOR THE COST OF MALPRACTICE INSURANCE

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: MALPR
DEP VAR: RMALPXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.023495	0.002541725	9.2439	0.0001
SPECSURG	1	0.025168	0.00231118	10.8895	0.0001
SPECINT	1	-0.00905412	0.002452321	-3.6921	0.0002
WEST	1	0.011406	0.002618888	4.3553	0.0001
NOEAST	1	0.008220686	0.002569278	3.1996	0.0014
SOUTH	1	-0.00619406	0.002446769	-2.5315	0.0114
BLSPOP2	1	0.002842689	0.002549904	1.1148	0.2651
BLSPOP3	1	0.001774565	0.003433258	0.5169	0.6053
BLSPOP4	1	0.009904491	0.002587565	3.8277	0.0001
BLSPOP5	1	0.020248	0.003295123	6.1447	0.0001

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-5

SHARE EQUATION FOR PHYSICIAN NET INCOME (INCLUDING PENSION PAYMENTS)

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: NETINC
DEP VAR: RNTINXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.535700	0.008572012	62.4941	0.0001
SPECSURG	1	0.054773	0.007794495	7.0272	0.0001
SPECINT	1	0.042406	0.008270496	5.1273	0.0001
WEST	1	-0.017793	0.008832245	-2.0146	0.0441
NOEAST	1	0.016303	0.008664935	1.8815	0.0601
SOUTH	1	-0.015327	0.008251771	-1.8574	0.0634
BLSPOP2	1	-0.00964654	0.008599597	-1.1217	0.2621
BLSPOP3	1	-0.010254	0.011579	-0.8856	0.3760
BLSPOP4	1	-0.023389	0.008726608	-2.6802	0.0074
BLSPOP5	1	-0.030517	0.011113	-2.7461	0.0061

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-6

SHARE EQUATION FOR THE COST OF SPACE AND UTILITIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: SPACE
DEP VAR: RSPACXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.100785	0.007189395	14.0186	0.0001
SPECSURG	1	-0.00739299	0.004907418	-1.5065	0.1322
SPECINT	1	-0.00502826	0.004978333	-1.0100	0.3127
WEST	1	0.0052397	0.005249057	0.9982	0.3183
NOEAST	1	0.0001371513	0.005064453	0.0271	0.9784
SOUTH	1	0.011032	0.004797693	2.2994	0.0216
BLSPOP2	1	0.002297068	0.005035877	0.4561	0.6484
BLSPOP3	1	0.011174	0.006841588	1.6332	0.1027
BLSPOP4	1	0.008907221	0.005158386	1.7267	0.0844
BLSPOP5	1	0.019601	0.006441098	3.0431	0.0024
INCORP	1	-0.010251	0.003859632	-2.6558	0.0080
GROUP	1	-0.024830	0.004088195	-6.0735	0.0001
PATVIS	1	-.0000409586	.00002534772	-1.6159	0.1063
OTHVIS	1	-.0000808258	.00003119703	-2.5908	0.0097
MEDICARE	1	.00005660134	0.0000806105	0.7022	0.4827
MEDICAID	1	-0.000112872	0.0001313983	-0.8590	0.3905

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-7

SHARE EQUATION FOR THE COST OF SUPPLIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: SUPPLY
DEP VAR: RSUPLXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.045825	0.00487347	9.4029	0.0001
SPECSURG	1	-0.019738	0.003326588	-5.9333	0.0001
SPECINT	1	-0.010222	0.003374659	-3.0291	0.0025
WEST	1	-0.00334921	0.003558174	-0.9413	0.3467
NOEAST	1	-0.00511537	0.003433037	-1.4900	0.1364
SOUTH	1	0.004326405	0.003252208	1.3303	0.1836
BLSPOP2	1	-0.00314756	0.003413666	-0.9220	0.3567
BLSPOP3	1	-0.0055809	0.004637702	-1.2034	0.2290
BLSPOP4	1	-0.00226542	0.003496711	-0.6479	0.5172
BLSPOP5	1	-0.00491813	0.004366222	-1.1264	0.2602
INCORP	1	0.002391356	0.002616326	0.9140	0.3609
GROUP	1	-0.00812837	0.002771262	-2.9331	0.0034
PATVIS	1	0.000104493	.00001718244	6.0814	0.0001
OTHVIS	1	-.0000577365	.00002114751	-2.7302	0.0064
MEDICARE	1	.00009580083	.00005464338	1.7532	0.0798
MEDICAID	1	-0.000123747	.00008907088	-1.3893	0.1650

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-8

SHARE EQUATION FOR COST OF EMPLOYEE SALARIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

```
MODEL:    EMPSAL
DEP VAR:  REMPSXTP

                           PARAMETER      STANDARD                     APPROX
VARIABLE           DF       ESTIMATE         ERROR        T RATIO     PROB>|T|

INTERCEPT           1       0.159342   0.008801923        18.1031       0.0001
SPECSURG            1      -0.030140   0.006008116        -5.0165       0.0001
SPECINT             1      -0.010326   0.006094937        -1.6942       0.0904
WEST                1    0.006580546   0.006426382         1.0240       0.3060
NOEAST              1      -0.026402   0.006200373        -4.2582       0.0001
SOUTH               1    0.004803451    0.00587378         0.8178       0.4136
BLSPOP2             1       0.015326   0.006165388         2.4858       0.0130
BLSPOP3             1  -.0000931079   0.008376106        -0.0111       0.9911
BLSPOP4             1    0.006272925   0.006315374         0.9933       0.3207
BLSPOP5             1      -0.012311    0.00788579        -1.5611       0.1187
INCORP              1    0.003097397   0.004725319         0.6555       0.5123
GROUP               1      -0.013029   0.005005148        -2.6030       0.0093
PATVIS              1   0.0002070166  .00003103303         6.6708       0.0001
OTHVIS              1    -0.00010885  0.0000381943        -2.8499       0.0044
MEDICARE            1  -.0000625987  .00009869084        -0.6343       0.5260
MEDICAID            1  .00006387193    0.00016087         0.3970       0.6914
```

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-9

SHARE EQUATION FOR THE COST OF MALPRACTICE INSURANCE

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: MALPR
DEP VAR: RMALPXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.034835	0.003784282	9.2052	0.0001
SPECSURG	1	0.022739	0.002583118	8.8031	0.0001
SPECINT	1	-0.00937207	0.002620446	-3.5765	0.0004
WEST	1	0.009716535	0.002762946	3.5167	0.0005
NOEAST	1	0.006192152	0.002665777	2.3228	0.0203
SOUTH	1	-0.00675314	0.002525362	-2.6741	0.0076
BLSPOP2	1	0.001777283	0.002650735	0.6705	0.5027
BLSPOP3	1	0.002013569	0.003601207	0.5591	0.5762
BLSFOP4	1	0.008545458	0.00271522	3.1472	0.0017
BLSPOP5	1	0.017768	0.003390402	5.2405	0.0001
INCORP	1	-0.00615516	0.002031595	-3.0297	0.0025
GROUP	1	0.0001330476	0.002151904	0.0618	0.9507
PATVIS	1	-.0000687991	.00001334228	-5.1565	0.0001
OTHVIS	1	.00000303131	.00001642119	0.1846	0.8536
MEDICARE	1	-0.000020758	.00004243095	-0.4892	0.6248
MEDICAID	1	0.0000797601	.00006916415	1.1532	0.2490

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-10

SHARE EQUATION FOR PHYSICIAN NET INCOME (INCLUDING PENSION PAYMENTS)

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=1392)

MODEL: NETINC
DEP VAR: RNTINXTP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.519352	0.012784	40.6248	0.0001
SPECSURG	1	0.042483	0.008726314	4.8684	0.0001
SPECINT	1	0.042105	0.008852413	4.7564	0.0001
WEST	1	-0.017048	0.009333811	-1.8265	0.0680
NOEAST	1	0.021012	0.009005552	2.3332	0.0198
SOUTH	1	-0.014359	0.008531201	-1.6831	0.0926
BLSPOP2	1	-0.014367	0.008954738	-1.6044	0.1088
BLSPOP3	1	-0.00903637	0.012166	-0.7428	0.4577
BLSPOP4	1	-0.021312	0.009172581	-2.3235	0.0203
BLSPOP5	1	-0.023909	0.011453	-2.0875	0.0370
INCORP	1	0.014179	0.006863152	2.0660	0.0390
GROUP	1	0.048496	0.007269581	6.6711	0.0001
PATVIS	1	-0.000154914	.00004507302	-3.4369	0.0006
OTHVIS	1	0.0002495268	0.0000554742	4.4981	0.0001
MEDICARE	1	-0.000110195	0.0001433406	-0.7688	0.4422
MEDICAID	1	.00006805796	0.000233651	0.2913	0.7709

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-11

INDEX EQUATION

(N=1500)

```
                              SSE       0.069739     F RATIO         9.03
                              DFE           1490     PROB>F        0.0001
DEP VAR: INDEXTB              MSE .00004680438     R-SQUARE      0.0517

                          PARAMETER     STANDARD
VARIABLE          DF       ESTIMATE        ERROR      T RATIO    PROB>|T|

INTERCEPT          1       1.092985 0.0005080862    2151.1805      0.0001
SPECSURG           1    -0.00324583 0.0004652905      -6.9759      0.0001
SPECINT            1    -0.00084517 0.0004918981      -1.7182      0.0860
WEST               1 0.0005931189 0.0005255976         1.1285      0.2593
NOEAST             1 0.0004434578 0.0005107834         0.8682      0.3854
SOUTH              1   0.001673042 0.0004916062        3.4032      0.0007
BLSPOP2            1 0.0001113382 0.0005128427         0.2171      0.8282
BLSPOP3            1     0.00143258 0.0006894829       2.0778      0.0379
BLSPOP4            1 0.0006290607  0.000515743         1.2197      0.2228
BLSPOP5            1   0.001683073 0.0006536143        2.5750      0.0101
```

DEPENDENT VARIABLE: AN INDEX NUMBER WHICH IS THE SUM OF THE PRODUCTS OF COST SHARES SPECIFIC TO EACH CASE AND MEDICARE ECONOMIC INDEX PRICES FOR FEE SCREEN YEAR 1982 WHICH ARE IDENTICAL FOR ALL CASES

INDEPENDENT VARIABLES:

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

TABLE IV-12

```
                                INDEX EQUATION

                                   (N=1500)

                                SSE      0.048364       F RATIO         13.69
                                DFE          1484       PROB>F         0.0001
DEP VAR: INDEXXTB               MSE .00003259004        R-SQUARE       0.1215

                           PARAMETER     STANDARD
VARIABLE           DF       ESTIMATE        ERROR        T RATIO     PROB>|T|

INTERCEPT           1       1.098233 0.0006114474      1796.1197       0.0001
SPECSURG            1    -0.00265509 0.0004180374        -6.3513       0.0001
SPECINT             1    -0.00089396 0.0004249344        -2.1038       0.0356
WEST                1 0.0002660499 0.0004454036           0.5973       0.5504
NOEAST              1 .00000233356 0.0004303312           0.0054       0.9957
SOUTH               1    0.001437078 0.0004112531         3.4944       0.0005
BLSPOP2             1 0.0001977041 0.0004299557           0.4598       0.6457
BLSPOP3             1 0.0008625023 0.0005803886           1.4861       0.1375
BLSPOP4             1 0.0005033938 0.0004392653           1.1460       0.2520
BLSPOP5             1    0.001178507 0.0005511739         2.1382       0.0327
INCORP              1 -0.000418706 0.0003281452          -1.2760       0.2022
GROUP               1    -0.00251636 0.0003468696        -7.2545       0.0001
PATVIS              1    8.79812E-07 0.0000021634         0.4067       0.6843
OTHVIS              1 -0.000008794 0.0000026641          -3.3009       0.0010
MEDICARE            1    0.000009142 .00000684062         1.3364       0.1816
MEDICAID            1 -.0000104387 .00001128419          -0.9251       0.3551
```

DEPENDENT VARIABLE: AN INDEX NUMBER WHICH IS THE SUM OF THE PRODUCTS OF COST SHARES SPECIFIC TO EACH CASE AND MEDICARE ECONOMIC INDEX PRICES FOR FEE SCREEN YEAR 1982 WHICH ARE IDENTICAL FOR ALL CASES (OVERHEAD IS IMPUTED AT 10.8 PERCENT)

INDEPENDENT VARIABLES:

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

TABLE IV-13

INDEX EQUATION
(N=2481)

```
                                  SSE     0.082481        F RATIO          12.53
                                  DFE         2454        PROB>F          0.0001
DEP VAR: INDEXXTB                 MSE .00003361098        R-SQUARE        0.1212
                            PARAMETER     STANDARD
VARIABLE           DF        ESTIMATE        ERROR        T RATIO       PROB>|T|

INTERCEPT           1        1.098272 0.0005612093      1956.9747         0.0001
WEST                1    0.0005180685  0.000356639         1.4526         0.1465
NOEAST              1     0.000735879  0.000339058         2.1704         0.0301
SOUTH               1     0.001382026 0.0003308197         4.1776         0.0001
ALLERGY             1    0.0001823476   0.00077488         0.2353         0.8140
CARD DIS            1     -0.00195408 0.0008967105        -2.1792         0.0294
DERM                1     -0.00159343 0.0007324653        -2.1754         0.0297
GASTRO              1     -0.00242448  0.001029514        -2.3550         0.0186
GEN SURG            1     -0.00357255 0.0005187755        -6.8865         0.0001
INT MED             1    -0.000645709  0.000500298        -1.2906         0.1969
NEURO SURG          1     -0.00460382 0.0008658558        -5.3171         0.0001
OB GYN              1     -0.00243956  0.000500757        -4.8717         0.0001
OPHTHAL             1     -0.00115597 0.0006803326        -1.6991         0.0894
ORTHO SURG          1     -0.00212899  0.000802202        -2.6539         0.0080
OTOLARYN            1     -0.00193656 0.0007114206        -2.7221         0.0065
PEDIATRICS          1    0.0007069922 0.0005044321         1.4016         0.1612
PSYCHIATRY          1     -0.00269121 0.0005117558        -5.2588         0.0001
UROLOGY             1     -0.00289186 0.0008225736        -3.5156         0.0004
BLSPOP2             1     0.000460702 0.0003584418         1.2853         0.1988
BLSPOP3             1    0.0001545409 0.0004663521         0.3314         0.7404
BLSPOP4             1    .00004889203 0.0003581753         0.1365         0.8914
BLSPOP5             1    0.0009603618 0.0004369121         2.1981         0.0280
INCORP              1    -0.000328347 0.0002626532        -1.2501         0.2114
GROUP               1     -0.00257936 0.0002818033        -9.1531         0.0001
PATVIS              1   -.0000016499  .00000212983        -0.7747         0.4386
OTHVIS              1   -.0000057043  .00000267337        -2.1337         0.0330
MEDICARE            1    .00000828491 .00000684566         1.2102         0.2263
MEDICAID            1   -.0000050337  .00000850962        -0.5915         0.5542
```

DEPENDENT VARIABLE: AN INDEX NUMBER WHICH IS THE SUM OF THE PRODUCTS OF COST SHARES SPECIFIC TO EACH CASE AND MEDICARE ECONOMIC INDEX PRICES FOR FEE SCREEN YEAR 1982 WHICH ARE IDENTICAL FOR ALL CASES (OVERHEAD IS IMPUTED AT 10.8 PERCENT)

INDEPENDENT VARIABLES:

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN

NON-CATEGORICAL VARIABLES

PATVIS: PATIENT OFFICE VISITS
OTHVIS: TOTAL PATIENT CONTACTS (OFFICE,HOSPITAL,ETC.)
MEDICARE: PERCENT OF PATIENTS WITH PART-B MEDICARE INSURANCE
MEDICAID: PERCENT OF PATIENTS RECEIVING MEDICAID PAYMENTS

SECTION V

COMPARISON OF 1976 AND 1977 COST SHARES

This Section compares the cost share distributions for 1976 and 1977. The separate analyses reported in the Base Year and here in the First Option Year have shown that various practice characteristics do significantly affect the firm's cost share distribution. Combining the samples for 1976 and 1977 permits testing for a shift in this distribution between years controlling for these remaining effects.

Table V-1 presents statistics from a MANOVA model which has been expanded to include the categorical variable labelled YEAR. The Wilk's statistic indicates that a strongly significant shift in cost shares occurred between the two years. The main effect is significant at the .0001 probability level as are the specialty, location, group, and incorporation variables. Some interaction terms also appear to be significant. The interaction between incorporation and YEAR indicates that incorporation is continuing among physicians perhaps mostly to take advantage of the more liberal pension allowances.

Table V-2 through V-6 show the results of regression analysis with cost shares as the dependent variables. This analysis parallels that presented in Section III with the addition of the categorical variable for YEAR. This variable assumes a value of one for 1977 and zero for 1976.

Examination of Table V-2 indicates that the share of expenses for rent increased by 1.5 percent from 1976 to 1977. The following table shows a significant but small decline in the share for supplies of -.46 percent and this decline also appears in the share attributable to employee salaries, -.80 percent. The proportion of expenses going toward malpractice premiums also fell by -.60 percent. However, no significant change appeared in the share attributable to net income. The relative rise in the share for rent and implicitly for auto expenses agrees with the general direction of prices which increased rapidly in the areas of real estate and energy.

TABLE V-1

A COMPARISON OF 1977 AND 1976 COST SHARES CONTROLLING FOR THE EFFECTS OF SPECIALTY,REGION, POPULATION AND OTHER PRACTICE CHARACTERISTICS

(COST SHARES ARE DEFINED ON A PER-PHYSICIAN BASIS)
(N=4264)

MANOVA EFFECTS	WILK'S CRITERION	PROBABILITY LEVEL
MAIN EFFECTS		
SPECALL	38.48	0.0001
BLSPOP	4.99	0.0001
REGION	11.86	0.0001
INCORP	15.10	0.0001
GROUP	24.06	0.0001
YEAR	17.77	0.0001
INTERACTIONS		
BLSPOP*REGION	2.02	0.0001
GROUP*INCORP	2.39	0.0265
INCORP*YEAR	3.50	0.0019
GROUP*YEAR	1.99	0.0635

SPECALL: TWELVE SPECIALTY CATEGORIES
1. ALLERGY
2. CARDIOVASCULAR DISEASE
3. DERMATOLOGY
4. GASTROENTEROLOGY
5. GENERAL PRACTICE
6. GENERAL SURGERY
7. INTERNAL MEDICINE
8. NEUROLOGICAL SURGERY
12. OPHTHALMOLOGY
13. ORTHOPEDIC SURGERY
14. OTOLARYNGOLOGY
17. UROLOGY

REGION: FOUR U.S. CENSUS REGIONS
1. NORTH-EASTERN U.S. CENSUS REGION
2. SOUTHERN U.S. CENSUS REGION
3. NORTH-CENTRAL U.S. CENSUS REGION
4. WESTERN U.S. CENSUS REGION

INCORP: INCORPORATED/UNINCORPORATED
1. INCORPORATED
2. UNINCORPORATED

GROUP: FIRM IS SOLO/FIRM IS GROUP
1. SOLO
2. GROUP

BLSPOP: FIVE B.L.S. POPULATION CATEGORIES (SMSA-BASED)
1. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION LESS THAN 50,000 (1970 CENSUS)
2. COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
3. COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
4. COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
5. COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

YEAR: YEAR OF PHYSICIAN COST SURVEY
1. 1976
2. 1977

TABLE V-2

SHARE EQUATION FOR THE COST OF SPACE AND UTILITIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=2640)

MODEL: SPACE
DEP VAR: RSPACXPP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.074549	0.004001457	18.6305	0.0001
SPECSURG	1	-0.00459401	0.00331175	-1.3872	0.1655
SPECINT	1	0.001981128	0.003499912	0.5661	0.5714
WEST	1	0.005694985	0.003599441	1.5822	0.1137
NOEAST	1	0.001381273	0.003522631	0.3921	0.6950
SOUTH	1	0.005570665	0.003352107	1.6618	0.0967
BLSPOP2	1	0.00380328	0.003470736	1.0958	0.2733
BLSPOP3	1	0.012429	0.004625586	2.6871	0.0073
BLSPOP4	1	0.008691296	0.003573975	2.4318	0.0151
BLSPOP5	1	0.015810	0.004548284	3.4761	0.0005
YEAR	1	0.014956	0.00250355	5.9739	0.0001
INCORP	1	-0.00805724	0.002635921	-3.0567	0.0023
GROUP	1	-0.023863	0.002767824	-8.6216	0.0001

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN
YEAR: YEAR OF PHYSICIAN COST SURVEY (1976/1977)

TABLE V-3

SHARE EQUATION FOR THE COST OF SUPPLIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=2640)

MODEL: SUPPLY
DEP VAR: RSUPLXPP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.066244	0.002888041	22.9373	0.0001
SPECSURG	1	-0.027771	0.002390247	-11.6186	0.0001
SPECINT	1	-0.012044	0.002526052	-4.7679	0.0001
WEST	1	-0.00293469	0.002597887	-1.1296	0.2587
NOEAST	1	-0.00447662	0.002542449	-1.7607	0.0784
SOUTH	1	0.0006732459	0.002419374	0.2783	0.7808
BLSPOP2	1	-0.00425089	0.002504994	-1.6970	0.0898
BLSPOP3	1	-0.00491271	0.003338504	-1.4715	0.1413
BLSPOP4	1	-0.0067944	0.002579507	-2.6340	0.0085
BLSPOP5	1	-0.00797211	0.003282711	-2.4285	0.0152
YEAR	1	-0.00459901	0.00180693	-2.5452	0.0110
INCORP	1	0.0001969404	0.001902469	0.1035	0.9176
GROUP	1	-0.00877384	0.001997669	-4.3920	0.0001

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN
YEAR: YEAR OF PHYSICIAN COST SURVEY (1976/1977)

TABLE V-4

SHARE EQUATION FOR COST OF EMPLOYEE SALARIES

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=2640)

MODEL: EMPSAL
DEP VAR: REMPSXPP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.186709	0.005409848	34.5127	0.0001
SPECSURG	1	-0.039045	0.004477386	-8.7206	0.0001
SPECINT	1	-0.017279	0.004731774	-3.6517	0.0003
WEST	1	0.010065	0.004866335	2.0684	0.0387
NOEAST	1	-0.028322	0.00476249	-5.9470	0.0001
SOUTH	1	0.004977119	0.004531946	1.0982	0.2722
BLSPOP2	1	0.0009669236	0.00469233	0.2061	0.8368
BLSPOP3	1	-0.00209555	0.006253651	-0.3351	0.7376
BLSPOP4	1	-0.00134969	0.004831906	-0.2793	0.7800
BLSPOP5	1	-0.014316	0.006149141	-2.3281	0.0200
YEAR	1	-0.00802879	0.003384723	-2.3721	0.0178
INCORP	1	0.015556	0.003563685	4.3652	0.0001
GROUP	1	-0.014597	0.003742013	-3.9007	0.0001

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN
YEAR: YEAR OF PHYSICIAN COST SURVEY (1976/1977)

TABLE V-5

SHARE EQUATION FOR THE COST OF MALPRACTICE INSURANCE

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=2640)

MODEL: MALPR
DEP VAR: RMALPXPP

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	APPROX PROB>|T|
INTERCEPT	1	0.030818	0.002399032	12.8459	0.0001
SPECSURG	1	0.028675	0.001985526	14.4418	0.0001
SPECINT	1	-0.00930134	0.002098336	-4.4327	0.0001
WEST	1	0.014465	0.002158008	6.7029	0.0001
NOEAST	1	0.003702499	0.002111957	1.7531	0.0797
SOUTH	1	-0.00658777	0.002009721	-3.2780	0.0011
BLSPOP2	1	0.002951835	0.002080844	1.4186	0.1561
BLSPOP3	1	0.001917932	0.002773222	0.6916	0.4893
BLSPOP4	1	0.011226	0.00214274	5.2391	0.0001
BLSPOP5	1	0.023900	0.002726877	8.7645	0.0001
YEAR	1	-0.00618442	0.001500977	-4.1203	0.0001
INCORP	1	-0.00763334	0.001580339	-4.8302	0.0001
GROUP	1	0.002600532	0.00165942	1.5671	0.1172

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN
YEAR: YEAR OF PHYSICIAN COST SURVEY (1976/1977)

TABLE V-6

SHARE EQUATION FOR PHYSICIAN NET INCOME
(INCLUDING PENSION PAYMENTS)

(CROSS EQUATION PARAMETERS FOR SAME VARIABLE SUM TO 0)
(N=2640)

```
MODEL:   NETINC
DEP VAR: RNTINXPP
                        PARAMETER      STANDARD                   APPROX
VARIABLE          DF     ESTIMATE         ERROR        T RATIO   PROB>|T|

INTERCEPT          1     0.509339   0.007584136        67.1585     0.0001
SPECSURG           1     0.047647   0.006276905         7.5909     0.0001
SPECINT            1     0.040892   0.006633535         6.1644     0.0001
WEST               1    -0.025870   0.006822178        -3.7921     0.0002
NOEAST             1     0.023745   0.006676596         3.5565     0.0004
SOUTH              1  -0.00496007   0.006353394        -0.7807     0.4351
BLSPOP2            1  -0.00199046   0.006578238        -0.3026     0.7622
BLSPOP3            1  -0.00725021   0.008767074        -0.8270     0.4083
BLSPOP4            1    -0.012321   0.006773911        -1.8189     0.0690
BLSPOP5            1    -0.021119   0.008620561        -2.4498     0.0144
YEAR               1 0.0008974533   0.004745087         0.1891     0.8500
INCORP             1  0.003674973   0.004995976         0.7356     0.4620
GROUP              1     0.047183   0.005245977         8.9941     0.0001
```

CATEGORICAL VARIABLES

SPECSURG: SURGERY AND ITS SPECIALTIES
SPECINT: INTERNAL MEDICINE AND ITS SPECIALITIES

WEST: WESTERN U.S. CENSUS REGION
NOEAST: NORTH-EASTERN U.S. CENSUS REGION
SOUTH: SOUTHERN U.S. CENSUS REGION

BLSPOP2: COUNTY IN SMSA WITH ACTUAL OR POTENTIAL POPULATION BETWEEN 50,000 AND 499,999 (1970 CENSUS)
BLSPOP3: COUNTY IN SMSA WITH POPULATION BETWEEN 500,000 AND 999,999 (1970 CENSUS)
BLSPOP4: COUNTY IN SMSA WITH POPULATION BETWEEN 1,000,000 AND 4,999,999 (1970 CENSUS)
BLSPOP5: COUNTY IN SMSA WITH POPULATION GREATER THAN 2,500,000 (1970 CENSUS)

INCORP: PRACTICE INCORPORATED
GROUP: PRACTICE HAS MORE THAN ONE PHYSICIAN
YEAR: YEAR OF PHYSICIAN COST SURVEY (1976/1977)

SECTION VI

RELATED COST AND INPUT ANALYSIS

This last Section presents three Tables which describe some cost and input characteristics of the physician practice. These Tables are based on the 1977 Survey data but are not directly related to the work in the previous sections.

Table VI-1 shows the average cost per office visit broken down by major specialty groups and by categories of weekly office visits. This measure of average cost only includes non-physician office based costs: rent, supplies, overhead, and employee salaries. It excludes net income, malpractice premiums and automobile expenses. Note that average cost per visit declines as the number of visits increases and this decline continues throughout the highest visit category. (Only in general practice is there a substantial reversal in the category of 175 to 199 visits per week.) This continuous decline in average costs is surprising because it implies considerable economies of scale even in the highest visit categories, a result not entirely consistent with the findings of other investigators whose work suggests more modest opportunities for economies of scale. One explanation may lie in the office visit variable itself which is a count of the previous week's visits; this count will show more variation than an annual visit total or certainly more than the annual cost measures. Some of the lower cost per visit entries in the high visit categories may be biased down due to untypically large numbers of office visits. The larger cost per visits in the lower categories may be affected in reverse by an unusually low count of visits. Examining the mid-range of office visits, 75 to 174, note that the cost per visit still declines but much less dramatically. In this range, a doubling of the office visits reduces the cost per visit from 25 to 35 percent.

Table VI-2 presents some data on the hiring patterns of the entire sample of firms. The entries in this Table constitute the probability of hiring an additional clerk, (i.e., secretary, receptionist, bookkeeper, file clerk) nurse, or other employee (i.e., technician or extender) given the existing distribution of employee types. That distribution appears in the three columns on the left of Table VI-2; it starts with the no employee situation. Note that the probability of the first employee being a clerk is .862, and that if the firm already has one employee who is a clerk, the probability that the next will also be a clerk is .449 which is higher than the probability of hiring a nurse, .361. Even when the firm has two clerks, the probability of hiring a third nearly equals the probability of hiring the first nurse. Much of the demand for clerks arises from the increase in the number of physicians which parallels the increase in the number of employees. Many of the firms demanding their third clerk may not be solos but two and three member firms. Tables were constructed controlling for the number of physicians but sample sizes were too small to generate meaningful tabular comparisons. Even though much of the demand for clerks may be generated by the increase in the number of physicians, the sustained demand is interesting as a general characteristic of all physician firms.

TABLE VI-1

OFFICE NON-PHYSICIAN PRACTICE COSTS
PER OFFICE VISIT
FOR INDICATED OFFICE VISIT CATEGORIES

(STANDARD DEVIATIONS IN PARENTHESES
AND CELL OBSERVATIONS BELOW)

SPECIALTY	N	NUMBER OF OFFICE PATIENT VISITS BY CATEGORY							
		0 TO 49	50 TO 74	75 TO 99	100 TO 124	125 TO 149	150 TO 174	175 TO 199	ABOVE 199
OVERALL	1756	29.23	15.93	10.81	9.08	8.37	7.11	7.03	5.34
		(31.81)	(9.56)	(6.07)	(3.78)	(3.61)	(3.89)	(2.90)	(2.56)
		(357)	(320)	(251)	(303)	(153)	(134)	(54)	(187)
GENERAL PRACTICE	670	17.44	9.24	8.12	8.74	7.58	5.91	6.45	5.05
		(14.40)	(5.88)	(4.76)	(3.78)	(3.50)	(1.98)	(2.30)	(2.35)
		(68)	(55)	(79)	(139)	(76)	(66)	(36)	(151)
INTERNAL MEDICINE	480	32.13	16.95	10.44	9.23	9.05	7.35	5.87	5.95
		(42.60)	(9.23)	(5.55)	(3.55)	(4.14)	(5.32)	(2.17)	(2.69)
		(118)	(119)	(77)	(79)	(27)	(36)	(4)	(20)
SURGERY SPECIALTIES	606	32.16	17.60	13.35	9.50	9.18	9.32	8.77	7.82
		(26.80)	(9.91)	(6.46)	(3.98)	(3.28)	(4.07)	(3.75)	(3.10)
		(171)	(146)	(94)	(84)	(50)	(32)	(14)	(15)

SAMPLE CONTAINS EDITED CASES FROM THE 1977 PHYSICIAN PRACTICE COST SURVEY
CASES ARE WEIGHTED FOR DIFFERENTIAL SELECTION AND RESPONSE PROBABILITIES
COSTS INCLUDE RENT, SUPPLIES, OVERHEAD (IMPUTED AT 10.8%) AND
NON-PHYSICIAN EMPLOYEE SALARIES

TABLE VI-2

PROBABILITY OF ADDING TO THE PHYSICIAN'S FIRM ONE CLERK, ONE NURSE, OR ONE OTHER EMPLOYEE TYPE AS A FUNCTION OF THE FIRM'S CURRENT COMPOSITION

FIRM COMPOSITION BEFORE ADDITION OF NEXT EMPLOYEE			PROBABILITY OF ADDING ONE ADDITIONAL			
	NUMBER OF					
CLERKS	NURSES	OTHERS	CLERK	NURSE	OTHER	TOTAL ADDITIONAL EMPLOYEES
0	0	0	0.867	0.087	0.046	737
1	0	0	0.449	0.361	0.191	807
0	1	0	0.901	0.068	0.031	323
0	0	1	0.895	0.058	0.047	172
2	0	0	0.396	0.428	0.175	502
1	1	0	0.623	0.200	0.177	345
1	0	1	0.456	0.316	0.228	193
0	2	0	0.852	0.123	0.025	81
0	1	1	0.924	0.030	0.045	66
0	0	2	0.898	0.061	0.041	49
3	0	0	0.383	0.426	0.191	188
2	1	0	0.356	0.404	0.240	225
1	2	0	0.746	0.148	0.107	122
1	1	1	0.692	0.167	0.141	78
0	3	0	0.667	0.296	0.037	27
0	2	1	0.929	0.000	0.071	14

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